SERVICE MANUAL

W370ST

notebook

Notebook Computer

W370ST

Service Manual

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Version 1.1
May 2013

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About this Manual

This manual is intended for service personnel who have completed sufficient training to undertake the maintenance and inspection of personal computers.

It is organized to allow you to look up basic information for servicing and/or upgrading components of the ***W370ST*** series notebook PC.

The following information is included:

Chapter 1, Introduction, provides general information about the location of system elements and their specifications.
Chapter 2, Disassembly, provides step-by-step instructions for disassembling parts and subsystems and how to upgrade elements of the system.

Appendix A, Part Lists
Appendix B, Schematic Diagrams

IMPORTANT SAFETY INSTRUCTIONS

Follow basic safety precautions, including those listed below, to reduce the risk of fire, electric shock and injury to persons when using any electrical equipment:

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit:

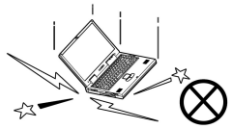
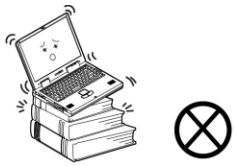
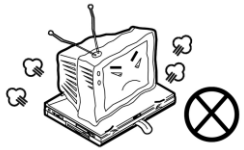
- Full Range AC/DC Adapter - AC Input 100 - 240V, 50 - 60Hz, DC Output 19.5V, 6.15A (**120W**) minimum.

This Computer's Optical Device is a Laser Class 1 Product

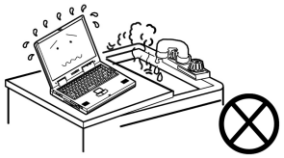
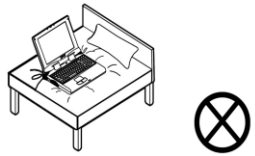
Instructions for Care and Operation

The notebook computer is quite rugged, but it can be damaged. To prevent this, follow these suggestions:

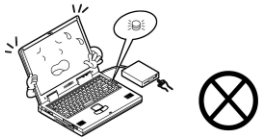
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.

Do not expose the computer to any shock or vibration.	*Do not place it on an unstable surface.*	*Do not place anything heavy on the computer.*
		

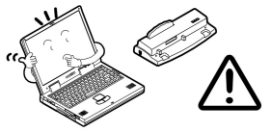
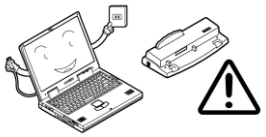
2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.

Do not expose it to excessive heat or direct sunlight.	*Do not leave it in a place where foreign matter or moisture may affect the system.*	*Don't use or store the computer in a humid environment.*	*Do not place the computer on any surface which will block the vents.*
			

3. **Follow the proper working procedures for the computer**. Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.

Do not turn off the power until you properly shut down all programs.	*Do not turn off any peripheral devices when the computer is on.*	*Do not disassemble the computer by yourself.*	*Perform routine maintenance on your computer.*
			

4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices**.

Use only approved brands of peripherals.	*Unplug the power cord before attaching peripheral devices.*
	

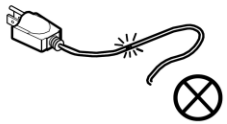
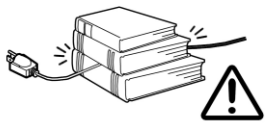
Power Safety

The computer has specific power requirements:

- Only use a power adapter approved for use with this computer.
- Your AC adapter may be designed for international travel but it still requires a steady, uninterrupted power supply. If you are unsure of your local power specifications, consult your service representative or local power company.
- The power adapter may have either a 2-prong or a 3-prong grounded plug. The third prong is an important safety feature; do not defeat its purpose. If you do not have access to a compatible outlet, have a qualified electrician install one.
- When you want to unplug the power cord, be sure to disconnect it by the plug head, not by its wire.
- Make sure the socket and any extension cord(s) you use can support the total current load of all the connected devices.
- Before cleaning the computer, make sure it is disconnected from any external power supplies.

Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

Do not plug in the power cord if you are wet.	*Do not use the power cord if it is broken.*	*Do not place heavy objects on the power cord.*
		

Battery Precautions

- Only use batteries designed for this computer. The wrong battery type may explode, leak or damage the computer.
- Do not continue to use a battery that has been dropped, or that appears damaged (e.g. bent or twisted) in any way. Even if the computer continues to work with a damaged battery in place, it may cause circuit damage, which may possibly result in fire.
- Recharge the batteries using the notebook's system. Incorrect recharging may make the battery explode.
- Do not try to repair a battery pack. Refer any battery pack repair or replacement to your service representative or qualified service personnel.
- Keep children away from, and promptly dispose of a damaged battery. Always dispose of batteries carefully. Batteries may explode or leak if exposed to fire, or improperly handled or discarded.
- Keep the battery away from metal appliances.
- Affix tape to the battery contacts before disposing of the battery.
- Do not touch the battery contacts with your hands or metal objects.

Battery Guidelines

The following can also apply to any backup batteries you may have.

- If you do not use the battery for an extended period, then remove the battery from the computer for storage.
- Before removing the battery for storage charge it to 60% - 70%.
- Check stored batteries at least every 3 months and charge them to 60% - 70%.

Battery Disposal

The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.

Caution

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used battery according to the manufacturer's instructions.

Battery Level

Click the battery icon in the taskbar to see the current battery level and charge status. A battery that drops below a level of 10% will not allow the computer to boot up. Make sure that any battery that drops below 10% is recharged within one week.

Related Documents

You may also need to consult the following manual for additional information:

User's Manual on CD
This describes the notebook PC's features and the procedures for operating the computer and its ROM-based setup program. It also describes the installation and operation of the utility programs provided with the notebook PC.

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the ***W370ST*** series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about drivers (e.g. VGA & audio) is also found in *User's Manual*. That manual is shipped with the computer.

Operating systems (e.g. *Windows 8*, etc.) have their own manuals as do application software (e.g. word processing and database programs). If you have questions about those programs, you should consult those manuals.

The ***W370ST*** series notebook is designed to be upgradeable. See ***Disassembly on page 2 - 1*** for a detailed description of the upgrade procedures for each specific component. Please note the warning and safety information indicated by the " " symbol.

The balance of this chapter reviews the computer's technical specifications and features.

System Specifications

Processor Options

Intel® Core™ i7 Processor

i7-4900MQ (2.80GHz)

8MB L3 Cache, **22nm**, DDR3L-1600MHz, TDP 47W

i7-4800MQ (2.70GHz), i7-4700MQ (2.40GHz)

6MB L3 Cache, **22nm**, DDR3L-1600MHz, TDP 47W

Core Logic

Intel® HM87 Chipset

BIOS

One 48Mb SPI Flash ROM

AMI BIOS

LCD

17.3" (43.94cm) HD+/ FHD

Video Adapter

Intel® Integrated GPU and NVIDIA® Discrete GPU

Supports NVIDIA® Optimus Technology

Intel Integrated GPU (GPU is Dependent on Processor)

Intel® HD Graphics 4600

Dynamic Frequency (Intel Dynamic Video Memory Technology for up to **1.7GB**)

Microsoft DirectX®11 Compatible

NVIDIA Discrete GPU

NVIDIA® GeForce GTX 765M

2GB GDDR5 Video RAM

Microsoft DirectX®11.1 Compatible

Security

BIOS Password

Security (Kensington® Type) Lock Slot

(**Factory Option**) Fingerprint Reader (**Model A Only**)

Audio

High Definition Audio Compliant Interface

Sound Blaster™ Cinema

2 * Built-In Speakers

Built-In Microphone

Memory

Three 204 Pin SO-DIMM Sockets Supporting **DDR3L 1600MHz** Memory

Memory Expandable up to **24GB**

(The real memory operating frequency depends on the FSB of the pro

cessor.)

Note: Three SO-DIMMs are only supported by Quad-Core CPUs; Dual-Core CPUs support two SO-DIMMs maximum

Storage

(**Factory Option**) One Changeable 12.7mm(h) Optical Device Type Drive (Super Multi Drive Module or Blu-Ray Combo Drive Module)

(**Factory Option**) Two Changeable 2.5" (6cm) 9.5mm (h) **SATA** (Serial) Hard Disk Drives/Solid State Drives (SSD) supporting RAID level 0/1

(**Factory Option**) One mSATA Solid State Drive (SSD)

Interface

One USB 2.0 Port

Three USB 3.0 Ports

One eSATA Port (USB 3.0 Port Combined)

One HDMI-Out Port

One Headphone-Out Jack

One Microphone-In Jack

One S/PDIF Out Jack

One RJ-45 LAN Jack

One External Monitor Port

One DC-in Jack

Keyboard

Full-size “WinKey” keyboard (with numeric key-pad)

Pointing Device

Built-in Touchpad (scrolling key functionality integrated

Card Reader

Embedded Multi-in-1 Push-Push Card Reader

- MMC (MultiMedia Card) / RS MMC
- SD (Secure Digital) / Mini SD / SDHC/ SDXC
- MS (Memory Stick) / MS Pro / MS Duo

Communication

Built-In Gigabit Ethernet LAN

(**Factory Option**) 2M HD PC Camera Module

WLAN/ Bluetooth Half Mini-Card Modules:

(**Factory Option**) Intel® Centrino® Advanced-N 6235 Wireless LAN (**802.11a/g/n**) + Bluetooth 4.0

(**Factory Option**) Intel® Centrino® Wireless-N 2230 Wireless LAN (**802.11b/g/n**)+ Bluetooth 4.0

(**Factory Option**) Third-Party Wireless LAN (**802.11b/g/n**)

(**Factory Option**) Third-Party Wireless LAN (**802.11b/g/n**) + Bluetooth 4.0

Mini Card Slots

Slot 1 for **WLAN** Module or WLAN and **Bluetooth** Combo Module

Slot 2 for mSATA **SSD**

Environmental Spec

Temperature

Operating: 5°C - 35°C

Non-Operating: -20°C - 60°C

Relative Humidity

Operating: 20% - 80%

Non-Operating: 10% - 90%

Power

Full Range AC/DC Adapter

AC Input: 100 - 240V, 50 - 60Hz

DC Output: 19.5V, 6.15A (**120W**)

8 Cell Smart Lithium-Ion Battery Pack, 76.96WH

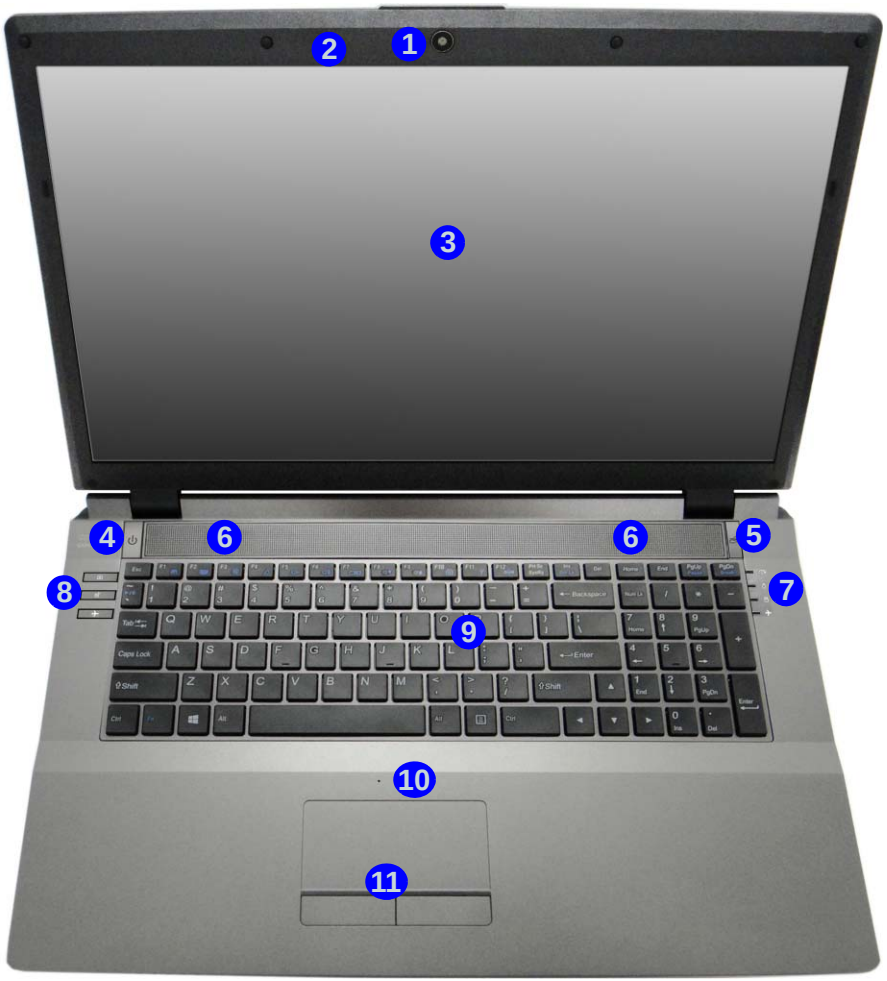
Dimensions & Weight

413mm (w) * 277.5mm (d) * 17.5 - 44mm (h)
3.2kg with ODD & 76.96WH Battery

External Locator - Front View with LCD Panel Open

Figure 1
Top View

1. Built-In PC Camera (**Optional**)
2. PC Camera LED
3. LCD
4. Power Button
5. GPU Button
6. Speakers
7. Top Case LED Indicators
8. Hot Key Buttons
9. Keyboard
10. Built-In Microphone
11. Touchpad & Buttons



External Locator - Front & Right side Views

Figure 2
Front Views

1. LED Indicators

Figure 3
Right Side Views

1. Multi-in-1 Card Reader
2. USB 3.0 Ports
3. Combined eSATA/ USB 3.0 Port
4. HDMI-Out Port
5. RJ-45 LAN Jack

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. Security Lock Slot
2. USB 2.0 Port
3. S/PDIF-Out Jack
4. Microphone-In Jack
5. Headphone-Out Jack
6. Optical Device Drive Bay
7. Emergency Eject Hole

Figure 5
Rear View

1. External Monitor Port
2. DC-In Jack
3. Vent

External Locator - Bottom View

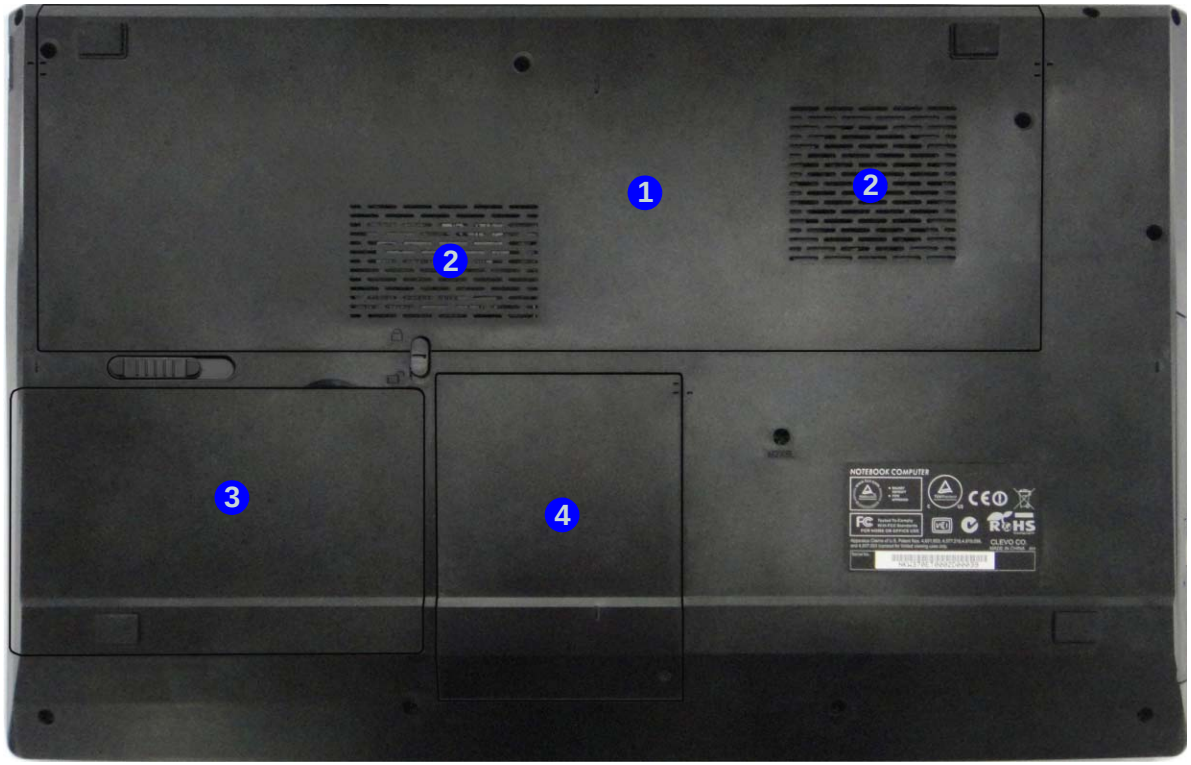


Figure 6
Bottom View

1. Component Bay Cover
2. Vent
3. Battery
4. HDD Bay

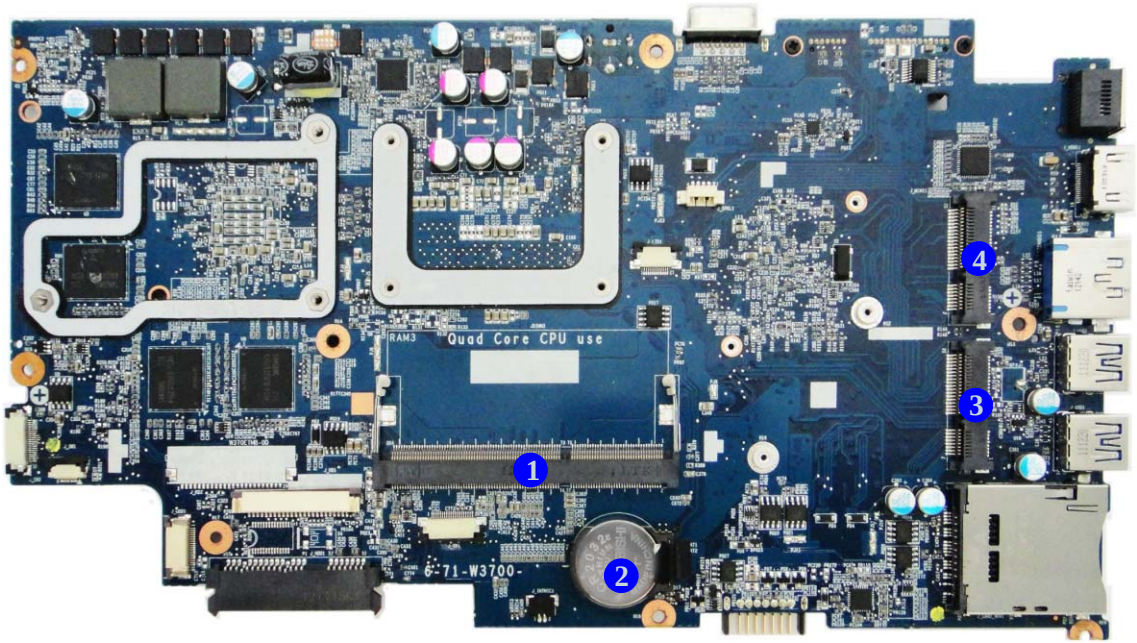
Overheating

To prevent your computer from overheating make sure nothing blocks the vent/fan intakes while the computer is in use.

Mainboard Overview - Top (Key Parts)

Figure 7
Mainboard Top Key Parts

1. Memory Slots DDR3L So-DIMM
2. CMOS Battery
3. Mini-Card Connector (3G Module)
4. Mini-Card Connector (WLAN Module)



Mainboard Overview - Bottom (Key Parts)

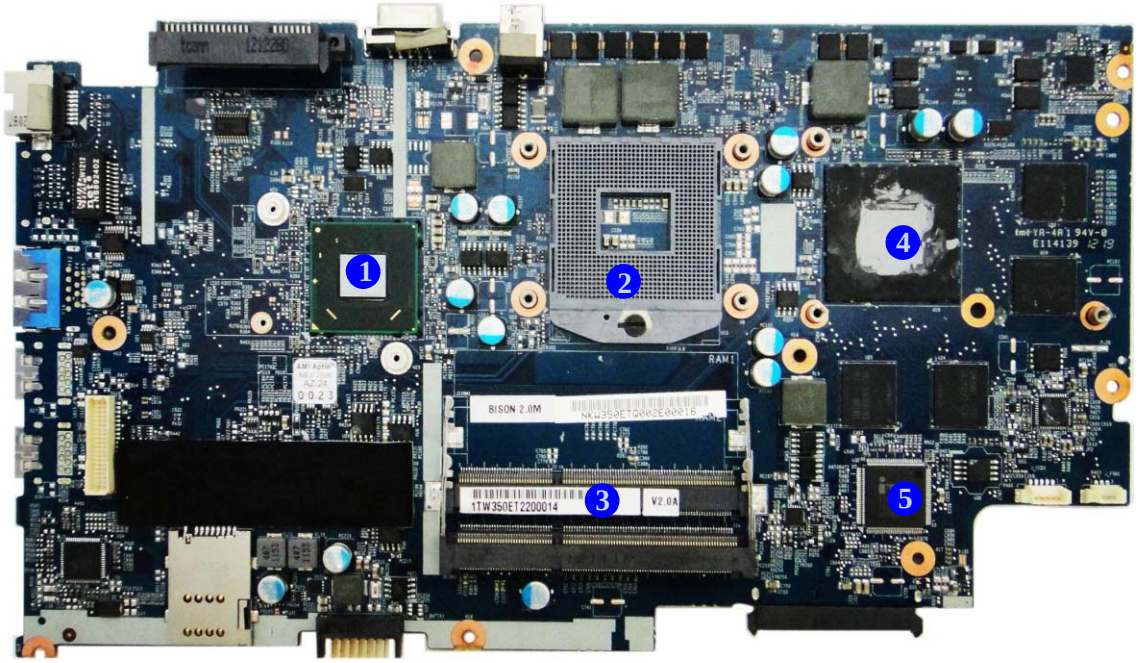


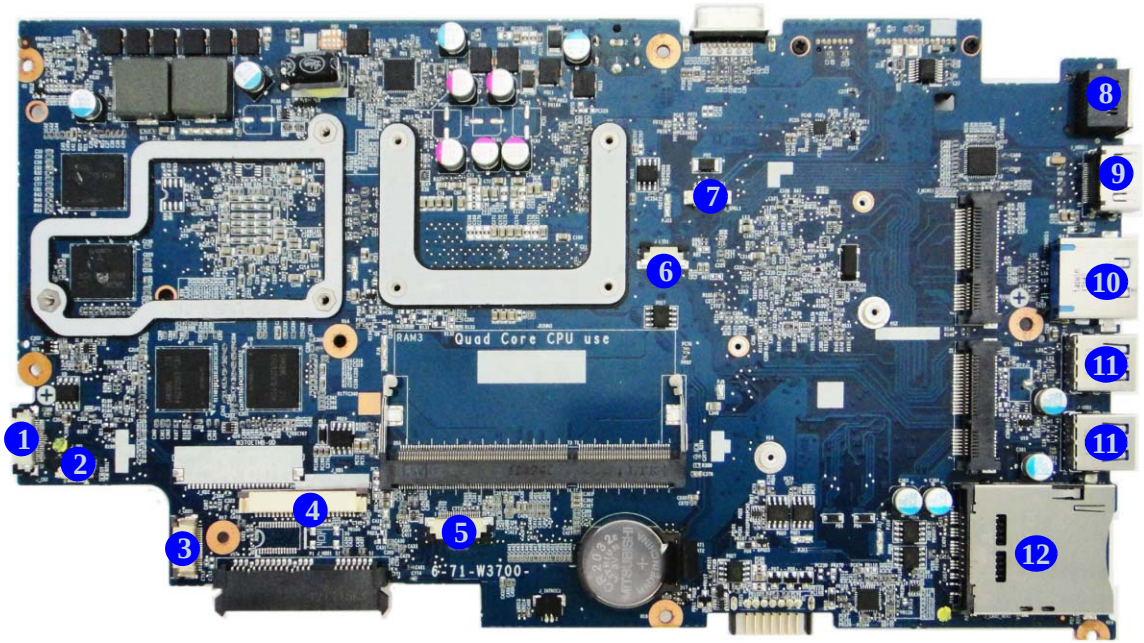
Figure 8
Mainboard Bottom Key Parts

1. PantherPoint Controller
2. CPU Socket
3. Memory Slots DDR3L So-DIMM
4. NV Graphic
5. KBC

Mainboard Overview - Top (Connectors)

Figure 9
Mainboard Top Connectors

1. Audio Cable Connector
2. Power Switch Cable Connector
3. ODD Cable Connector
4. Keyboard Cable Connector
5. Click Board Cable Connector
6. VGA SW Cable Connector
7. Speaker Cable Connector
8. RJ-45 LAN Jack
9. HDMI-Out Port
10. eSATA Connector
11. USB 3.0 Ports
12. Multi-in-1 Card Reader



Mainboard Overview - Bottom (Connectors)

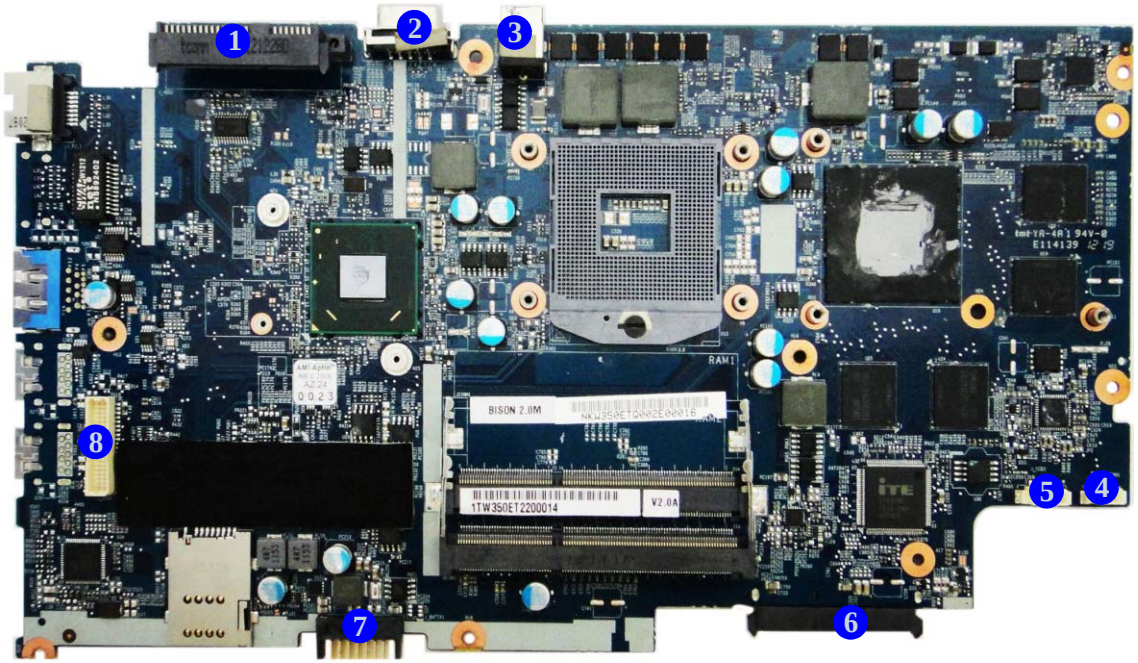


Figure 10
Mainboard Bottom Connectors

1. HDD2 Connector
2. External Monitor Port
3. DC-In Jack
4. Fan Cable Connector
5. CCD Cable Connector
6. HDD1 Connector
7. Battery Connector
8. LCD Cable Connector

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the ***W370ST*** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

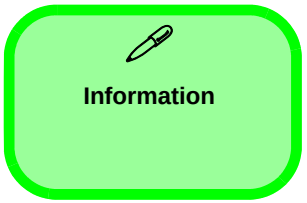
We suggest you completely review any procedure before you take the computer apart.

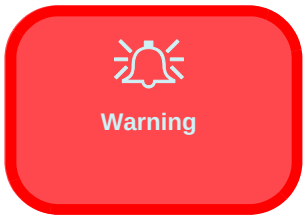
Procedures such as upgrading/replacing the RAM, optical device and hard disk are included in the User's Manual but are repeated here for your convenience.

To make the disassembly process easier each section may have a box in the page margin. Information contained under the figure # will give a synopsis of the sequence of procedures involved in the disassembly procedure. A box with a lists the relevant parts you will have after the disassembly process is complete. **Note**: The parts listed will be for the disassembly procedure listed ONLY, and not any previous disassembly step(s) required. Refer to the part list for the previous disassembly procedure. The amount of screws you should be left with will be listed here also.

A box with a will also provide any possible helpful information. A box with a contains warnings.

An example of these types of boxes are shown in the sidebar.





NOTE: All disassembly procedures assume that the system is turned **OFF**, and disconnected from any power supply (the battery is removed too).

Maintenance Tools

The following tools are recommended when working on the notebook PC:

- M3 Philips-head screwdriver
- M2.5 Philips-head screwdriver (magnetized)
- M2 Philips-head screwdriver
- Small flat-head screwdriver
- Pair of needle-nose pliers
- Anti-static wrist-strap

Connections

Connections within the computer are one of four types:

Locking collar sockets for ribbon connectors	To release these connectors, use a small flat-head screwdriver to gently pry the locking collar away from its base. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Pressure sockets for multi-wire connectors	To release this connector type, grasp it at its head and gently rock it from side to side as you pull it out. Do not pull on the wires themselves. When replacing the connection, do not try to force it. The socket only fits one way.
Pressure sockets for ribbon connectors	To release these connectors, use a small pair of needle-nose pliers to gently lift the connector away from its socket. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.
Board-to-board or multi-pin sockets	To separate the boards, gently rock them from side to side as you pull them apart. If the connection is very tight, use a small flat-head screwdriver - use just enough force to start.

Maintenance Precautions

The following precautions are a reminder. To avoid personal injury or damage to the computer while performing a removal and/or replacement job, take the following precautions:

1. **Don't drop it**. Perform your repairs and/or upgrades on a stable surface. If the computer falls, the case and other components could be damaged.
2. **Don't overheat it**. Note the proximity of any heating elements. Keep the computer out of direct sunlight.
3. **Avoid interference**. Note the proximity of any high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage components and/or data. You should also monitor the position of magnetized tools (i.e. screwdrivers).
4. **Keep it dry**. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.
5. **Be careful with power**. Avoid accidental shocks, discharges or explosions.
   - Before removing or servicing any part from the computer, turn the computer off and detach any power supplies.
   - When you want to unplug the power cord or any cable/wire, be sure to disconnect it by the plug head. Do not pull on the wire.
6. **Peripherals** – Turn off and detach any peripherals.
7. **Beware of static discharge**. ICs, such as the CPU and main support chips, are vulnerable to static electricity. Before handling any part in the computer, discharge any static electricity inside the computer. When handling a printed circuit board, do not use gloves or other materials which allow static electricity buildup. We suggest that you use an anti-static wrist strap instead.
8. **Beware of corrosion**. As you perform your job, avoid touching any connector leads. Even the cleanest hands produce oils which can attract corrosive elements.
9. **Keep your work environment clean**. Tobacco smoke, dust or other air-born particulate matter is often attracted to charged surfaces, reducing performance.
10. **Keep track of the components**. When removing or replacing any part, be careful not to leave small parts, such as screws, loose inside the computer.

Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

Cleaning

Do not apply cleaner directly to the computer, use a soft clean cloth.
Do not use volatile (petroleum distillates) or abrasive cleaners on any part of the computer.

Disassembly Steps

The following table lists the disassembly steps, and on which page to find the related information. **PLEASE PERFORM THE DISASSEMBLY STEPS IN THE ORDER INDICATED.**

To remove the Battery:

1. Remove the battery *page 2 - 5*

To remove the Optical Device:

1. Remove the battery *page 2 - 5*
2. Remove the Optical device *page 2 - 6*

To remove the HDD:

1. Remove the battery *page 2 - 5*
2. Remove the HDD *page 2 - 7*

To remove and install the Processor:

1. Remove the battery *page 2 - 5*
2. Remove the Processor *page 2 - 11*
3. Install the Processor *page 2 - 13*

To remove the Keyboard:

1. Remove the battery *page 2 - 5*
2. Remove the System Memory *page 2 - 14*

To remove the System Memory:

1. Remove the battery *page 2 - 5*
2. Remove the System Memory *page 2 - 15*

Removing the Battery

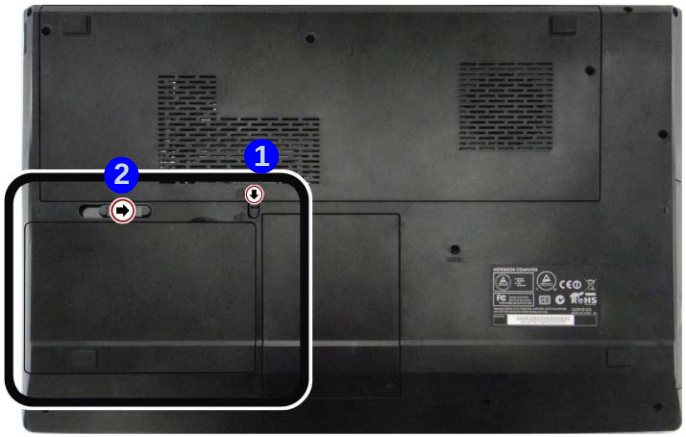
If you are confident in undertaking upgrade procedures yourself, for safety reasons it is best to remove the battery.

1. Turn the computer off, and turn it over.
2. Slide the latch 1 in the direction of the arrow.
3. Slide the latch 2 in the direction of the arrow and battery will pop-up.
4. Lift the battery 3 up (***Figure b***) and out of the battery bay.

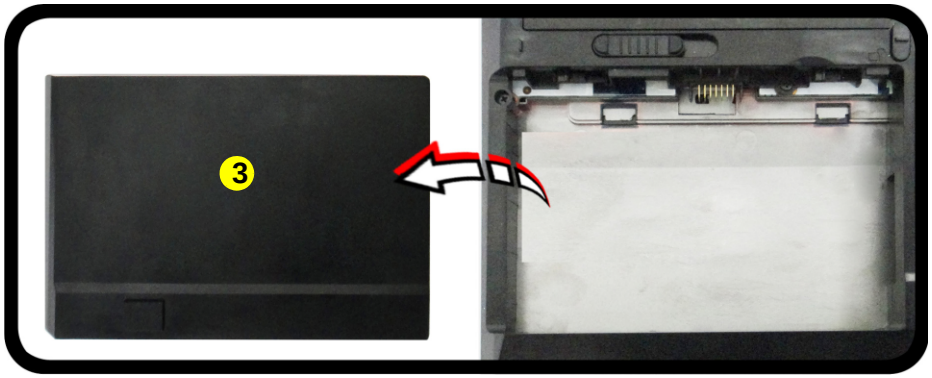
Figure 1
Battery Removal

a. Slide the latch 1 in the direction of the arrow. and slide the latch 2 in the direction of the arrow and battery will pop-up.
b. Lift the battery out of the bay as indicated.

a.



b.



3. Battery

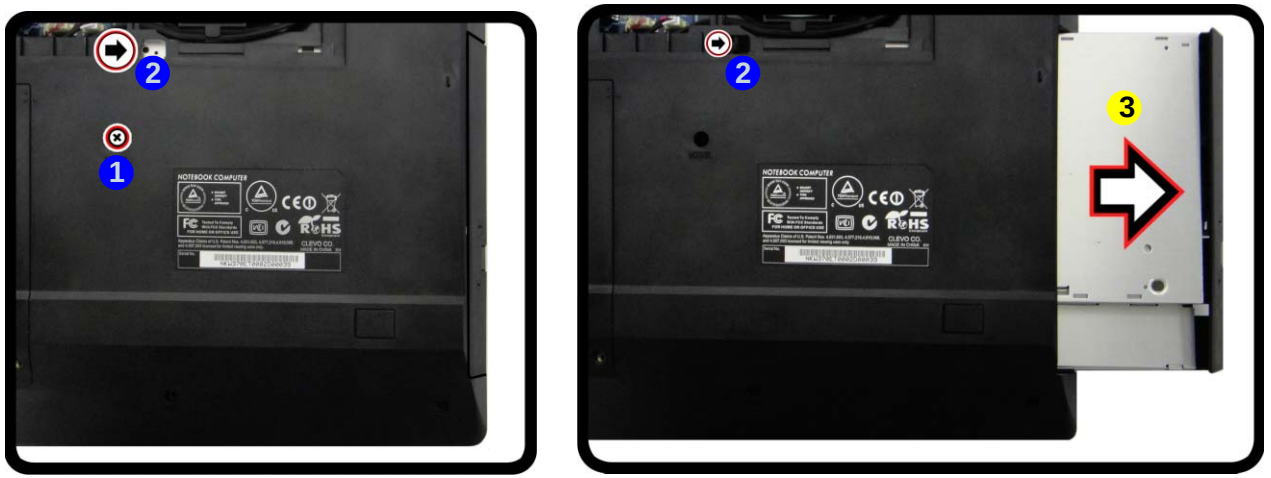
Removing the Optical (CD/DVD) Device

1. Turn off the computer, and turn it over and remove the battery (*page 2 - 5*) and remove the component bay cover (*page 2 - 5*).
2. Remove the screw 1, and use a screwdriver to carefully push out the optical device 3 at point 2.
3. Reverse the process to install the new device.

Figure 2
Optical Device Removal

a. Remove the screw and push the optical device out of the computer.

a.



3. Optical Device

- 1 Screw

Removing the Hard Disk Drive

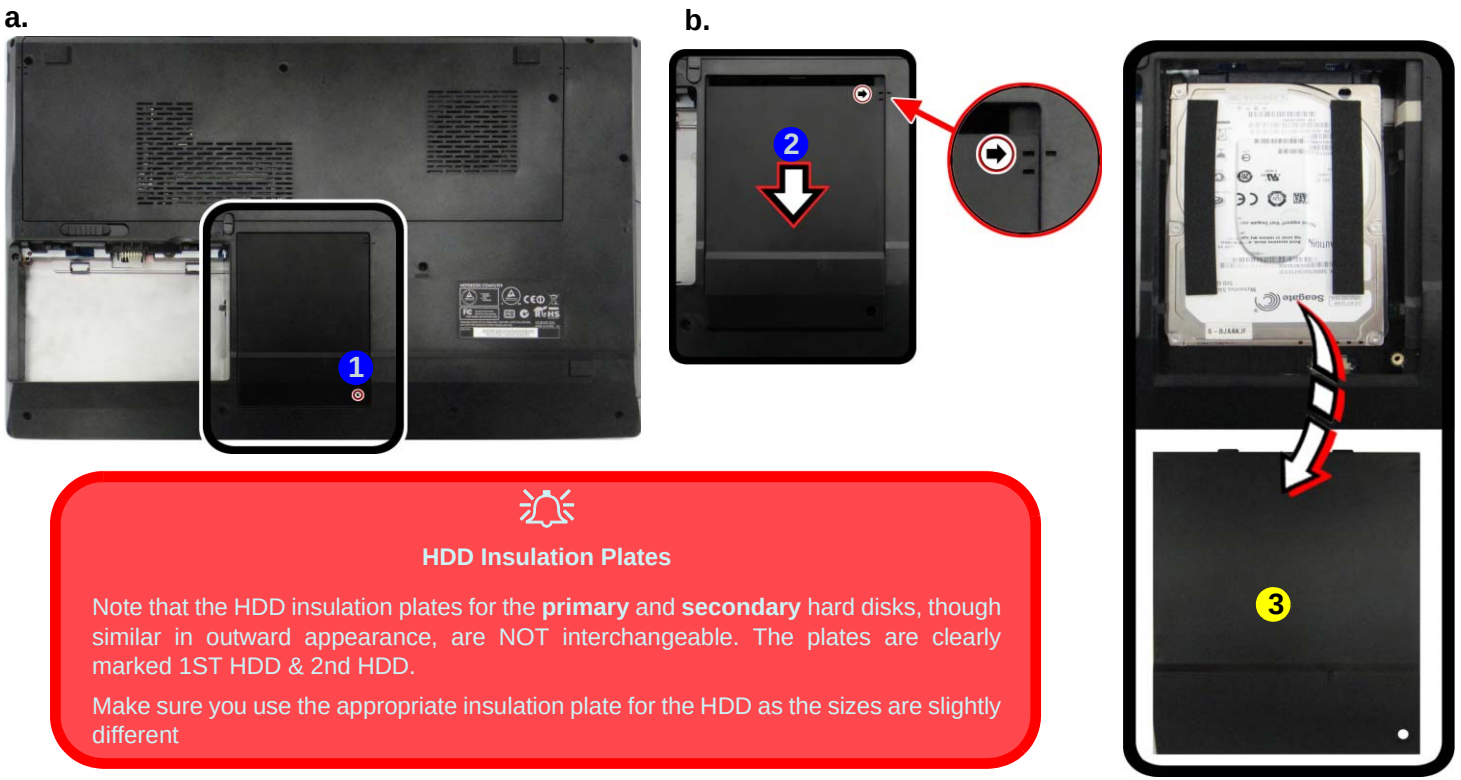
The hard disk drive is mounted in a removable case and can be taken out to accommodate other 2.5" SATA hard disk drives with a height of 9.5mm or 7mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**) when setting up a new hard disk.

Hard Disk Upgrade Process

1. Turn off the computer, and turn it over and remove the battery (*page 2 - 5*).
2. Locate the Hard disk bay cover and remove screw 1.
3. Slide the cover at point 2 in the direction of the arrow (as illustrated) until the case markers line up.
4. Remove the bay cover 3.

Figure 3
HDD Assembly Removal

a. Remove the screws.
b. Remove the cover



HDD Insulation Plates

Note that the HDD insulation plates for the **primary** and **secondary** hard disks, though similar in outward appearance, are NOT interchangeable. The plates are clearly marked 1ST HDD & 2nd HDD.

Make sure you use the appropriate insulation plate for the HDD as the sizes are slightly different

3. Hard Disk Bay Cover

- 1 Screws

Figure 4
HDD Assembly Removal (cont'd.)

c. Lift the hard disk assembly out off the computer.
d. Remove the screws to release the hard disk from the mylar.

5. Lift the hard disk assembly 4 out of the computer (***Figure 4c***).
6. Remove screws 5 - 6.
7. Separate the hard disk 7 and hard disk mylar 8.
8. Reverse the process to install a new hard disk(s).

c.

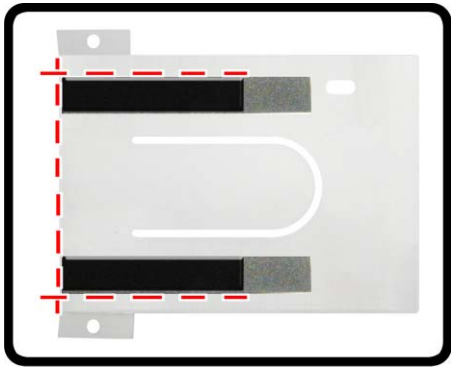
d.

7. Hard Disks
8. Hard Disk Mylar

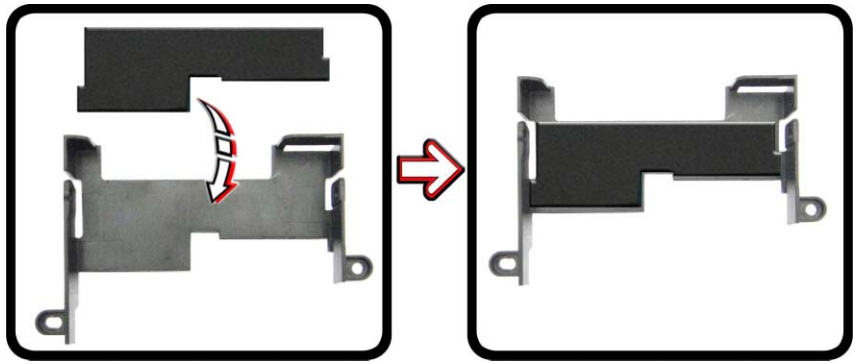
- 2 Screws

Hard Disk Size Note (Foam Rubber Insert)

Note that the hard disks pictured on the following pages are all 9.5mm(H) hard disk drives. In some cases 7mm(H) hard disk drives will be installed. For more information contact your distributor/supplier, and bear in mind your warranty terms.



HDD 1



HDD 2

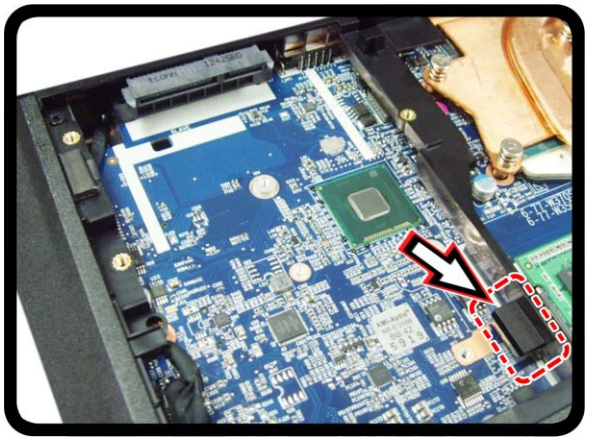


Figure 5
Foam Rubber Insert for 7mm(H) HDDs

- If you are replacing a 9.5mm(H) HDD with a 7mm(H) HDD then insert the foam rubber insert (as shown above).
- If you are replacing a 7mm(H) HDD with a 9.5mm(H) HDD then remove the foam rubber insert.

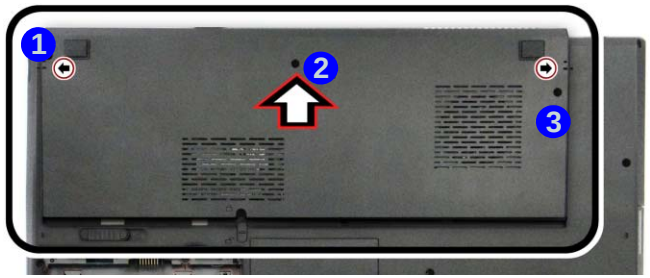
Figure 6
Secondary HDD Assembly Removal

a. Remove the screws and cover.
b. Locate the hard disk.
c. Remove the screws.
d. Slide the HDD out.
e. Lift the hard disk assembly out off the computer.
f. Remove the screws and separate the HDD(s) from case.

Removing the Hard Disk(s) in the Secondary HDD Bay

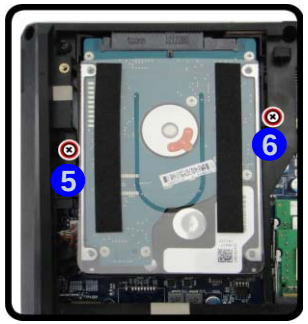
1. Turn **off** the computer, and turn it over and remove the battery.
2. Locate the component bay cover and remove screws 1 - 3 and the cover.
3. The hard disk will be visible at point 4 on the mainboard (***Figure 6b***).
4. Remove screws 5 - 6 (***Figure 6c***).
5. Grip the tab and slide the hard disk in the direction of arrow 7 (***Figure 6d***).
6. Lift the hard disk assembly 8 out of the compartment (***Figure 6e***).
7. Remove the screws 9 - 10 to release the hard disk(s) 11 and hard disk mylar 12 from the case 13 .
8. Reverse the process to install any new hard disk(s).

a.

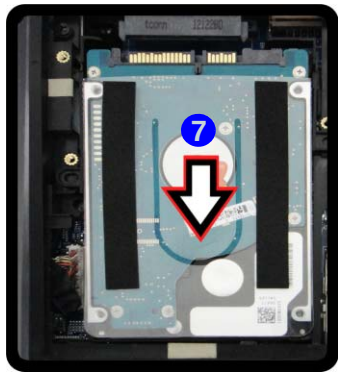


b.

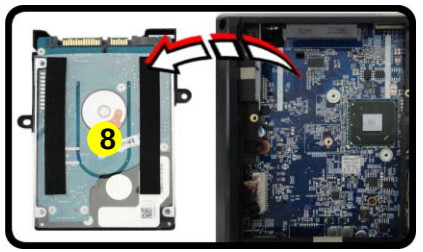
c.



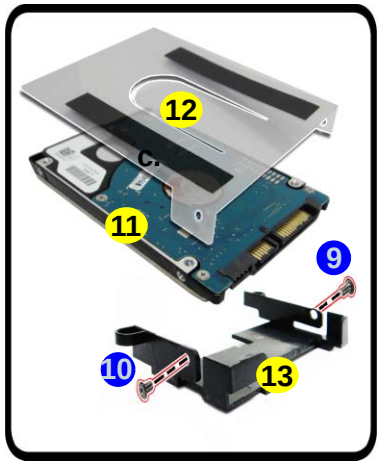
d.



e.



f.



11. Hard Disks
12. Hard Disk Mylar
13. Hard Disk Case

- 5 Screws

Removing and Installing the Processor

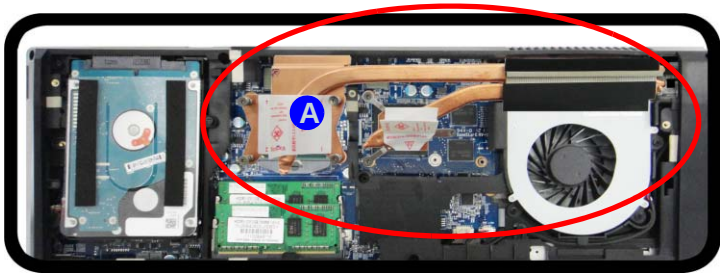
Processor Removal Procedure

1. Turn off the computer, and turn it over, remove the battery (***page 2 - 5***), and component bay cover (***page 2 - 10***).
2. The CPU heat sink will be visible at point A on the mainboard (***Figure 7a***).
3. Remove screws 7, 6, 5, 4, 3, 2 & 1 , the reverse order indicated on the label (***Figure 7b***).
4. Carefully lift the heat sink 9 up straight (**do not angle it as you lift it**) about a centimeter in order to clear the fan unit, and then angle it around 45° to remove it from the computer (***Figure 7c***).

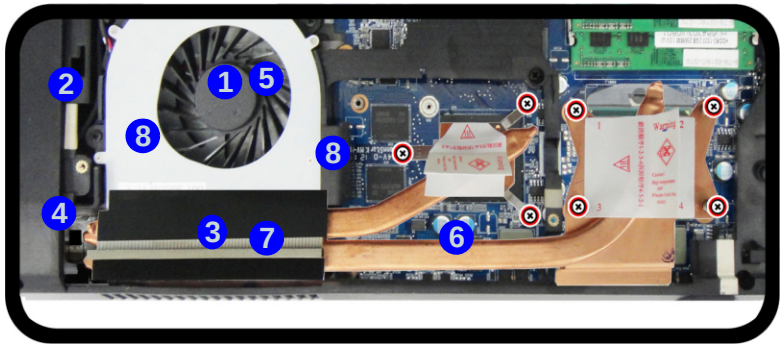
Figure 7
Processor Removal

a. Locate the heat sink.
b. Remove the screws.
c. Grip the heat sink tab and carefully lift the heat sink up and off the computer.

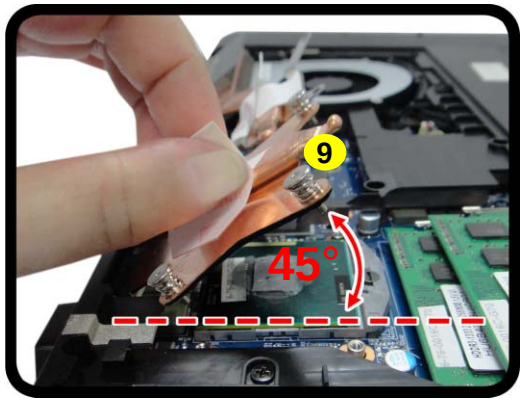
a.

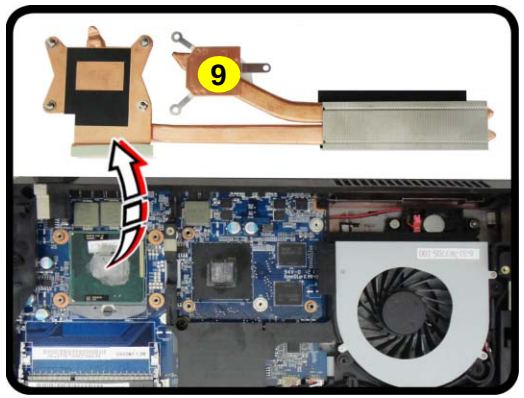


b.



c.





Caution

The heat sink, and CPU area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.

9. CPU Heat Sink

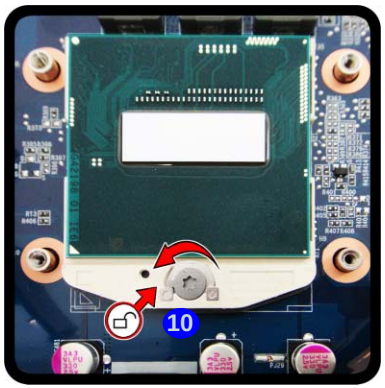
- 7 Screws

Figure 8
Processor Removal (cont'd)

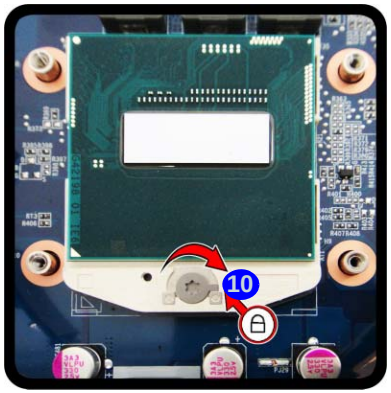
d. Turn the release latch to unlock the CPU.
e. Lift the CPU out of the socket.

5. Turn the release latch 10 towards the unlock symbol to release the CPU (***Figure 8d***).
6. Carefully (it may be hot) lift the CPU 11 up and out of the socket (***Figure 8e***).
7. Reverse the process to install a new CPU.
8. When re-inserting the CPU, pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!).

d.

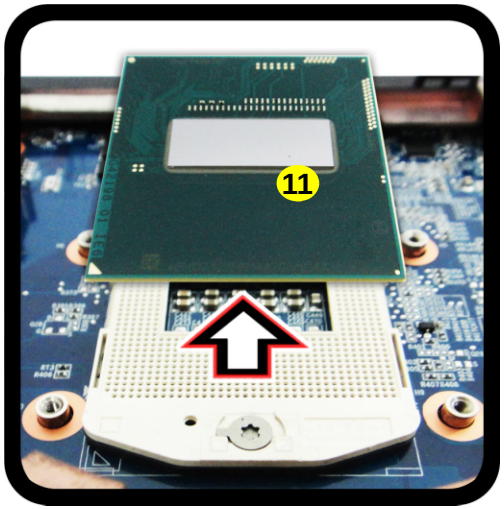


Unlock



Lock

e.



Caution

The heat sink, and CPU area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.

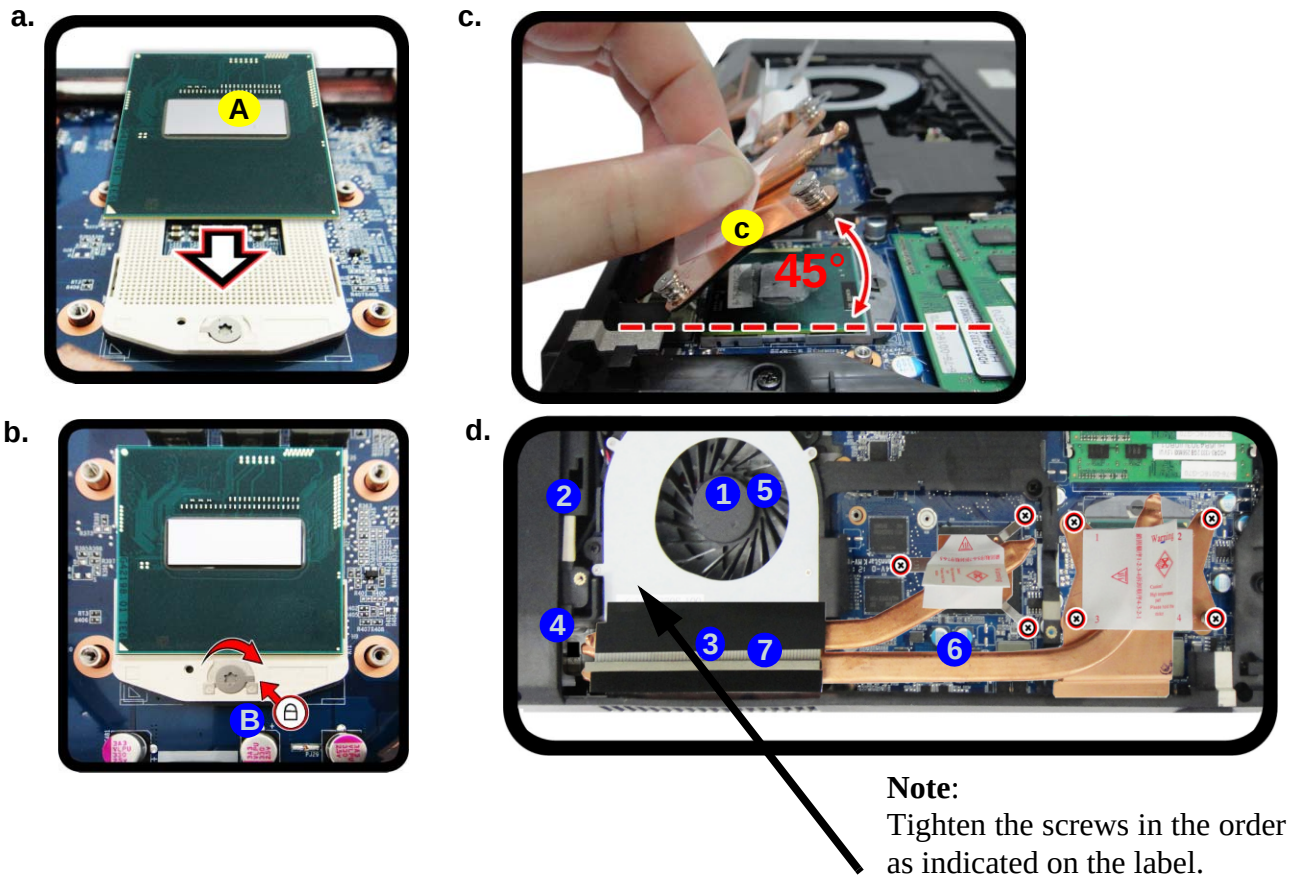
11. CPU

Processor Installation Procedure

1. Insert the CPU A (*Figure 9a*), pay careful attention to the pin alignment, it will fit only one way (DO NOT FORCE IT!), and turn the release latch B towards the lock symbol (*Figure 9b*).
2. Insert the heat sink C at an angle of around 30° as indicated in *Figure 9c*.
3. Tighten the CPU heat sink screws in the order 1, 2, 3, 4, 5, 6 & 7 (the order as indicated on the label and *Figure 9d*).
4. Replace the component bay cover.

Figure 9
Processor Installation

a. Insert the CPU.
b. Turn the release latch towards the lock symbol.
c. Insert the heat sink.
d. Tighten the screws.



Note:
Tighten the screws in the order as indicated on the label.

A. CPU
D. Heat Sink

- 7 Screws

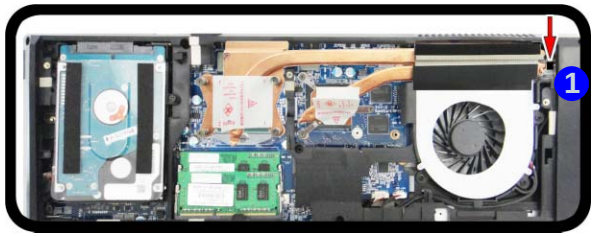
Figure 10
Keyboard Removal

a. Use a screwdriver to carefully push out the speakers cover at point 1.
b. Turn the computer over, unsnap the LED cover module upwards from the center of the computer.
c. Remove screws from the keyboard.
d. Carefully lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins away from the base.
e. Remove the keyboard.

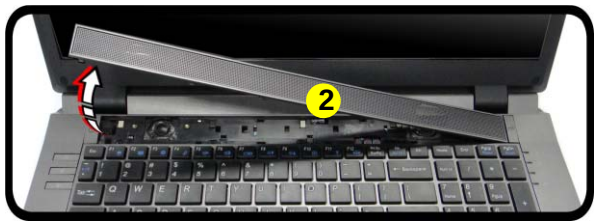
Removing the Keyboard

1. Turn off the computer, and turn it over and remove the battery (***page 2 - 5***), and component bay cover (***page 2 - 10***).
2. Use a screwdriver to carefully push out the speakers cover 2 at point 1.
3. Turn the computer over, unsnap the speaker cover 2 upwards from the center of the computer (***Figure 10b***).
4. Remove screws 3 - 7 from the keyboard (***Figure 10c***).
5. Carefully lift the keyboard 8 up, being careful not to bend the keyboard ribbon cable 9. Disconnect the keyboard ribbon cable 9 from the locking collar socket 10 by using a flat-head screwdriver to pry the locking collar pins away from the base (***Figure 10d***).
6. Carefully lift up the keyboard 8 (***Figure 10e***) off the computer.

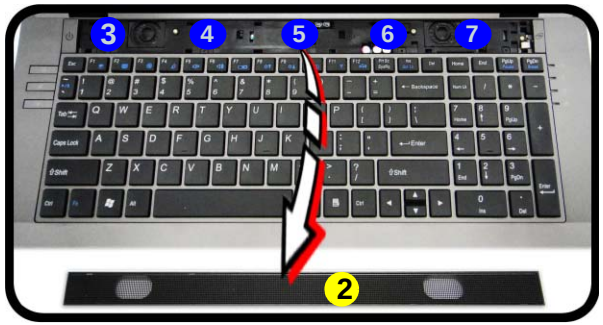
a.



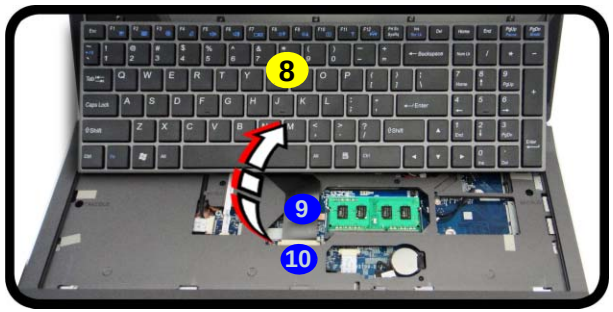
b.



c.



d.



e.

Keyboard Tabs

2. Speaker Cover
8. Keyboard

- 5 Screws

Re-Inserting the Keyboard

When re-inserting the keyboard firstly align the **four** keyboard tabs at the bottom (***Figure 10e***) at the bottom of the keyboard with the slots in the case.

Removing the Primary System Memory (RAM)

The computer has **three** memory sockets for 204 pin Small Outline Dual In-line (SO-DIMM) **DDR III (DDR3L)** type memory modules. The total memory size is automatically detected by the POST routine once you turn on your computer.

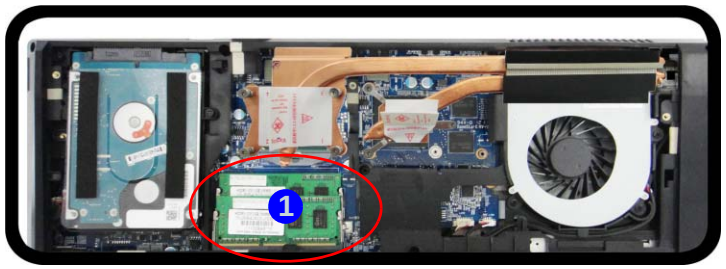
Note that **three SO-DIMMs are only supported by Quad-Core CPUs**; **Dual-Core CPUs support two SO-DIMMs maximum.**

Two primary memory sockets are located under component bay cover (the bottom case cover), and one secondary memory sockets are located under the keyboard (not user upgradable). If you are installing only two RAM modules then they should be installed in the primary memory sockets under the component bay cover.

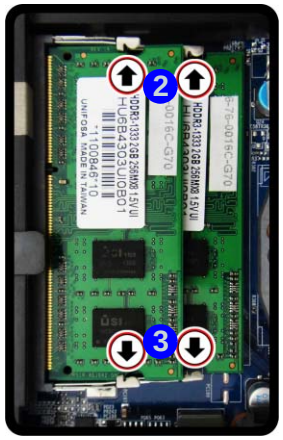
Primary System Memory Upgrade Process

1. Turn **off** the computer, turn it over and remove the battery (***page 2 - 5***) and remove the component bay cover (***page 2 - 10***).
2. The RAM modules will be visible at point 1 on the mainboard.
3. Gently pull the two release latches (2 & 3) on the sides of the memory socket in the direction indicated by the arrows (***Figure 11b***). The RAM module 4 will pop-up (***Figure 11c***), and you can then remove it.
4. Pull the latches to release the second module if necessary.

a.



b.



c.

Figure 11
Primary RAM Module Removal

a. The RAM modules will be visible at point 1 on the mainboard.
b. Pull the release latches.
c. Remove the module.

Contact Warning

Be careful not to touch the metal pins on the module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.

4. RAM Module

Figure 12
RAM Module (under keyboard) Removal

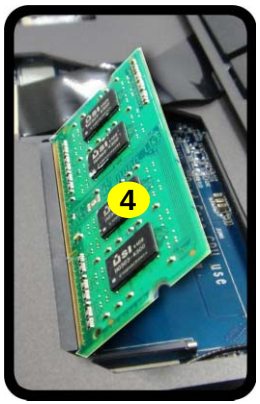
d. The secondary RAM modules will be visible at point 5.
e. Pull the release latches.
f. Remove the module.

Memory (under Keyboard) Upgrade Process

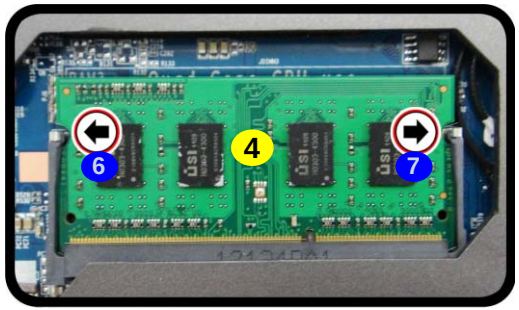
5. Turn **off** the computer, turn it over and remove the battery (***page 2 - 5***), component bay cover (***page 2 - 10***) and keyboard (***page 2 - 14***).
6. The memory sockets will be visible at point 5 (***Figure 12d***).
7. Gently pull the two release latches (6 & 7) on the sides of the memory socket(s) in the direction indicated below.
8. The RAM module 4 will pop-up, and you can remove it (***Figure 12f***).

d.

f.



e.



Contact Warning

Be careful not to touch the metal pins on the module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.

4 RAM Module

9. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
10. The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the slot as it will go. DO NOT FORCE the module; it should fit without much pressure.
11. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
12. Replace the bay cover and screws.
13. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

Appendix A: Part Lists

This appendix breaks down the ***W370ST*** series notebook's construction into a series of illustrations. The component part numbers are indicated in the tables opposite the drawings.

Note: This section indicates the *manufacturer's* part numbers. Your organization may use a different system, so be sure to cross-check any relevant documentation.

Note: Some assemblies may have parts in common (especially screws). However, the part lists DO NOT indicate the total number of duplicated parts used.

Note: Be sure to check any update notices. The parts shown in these illustrations are appropriate for the system at the time of publication. Over the product life, some parts may be improved or re-configured, resulting in *new* part numbers.

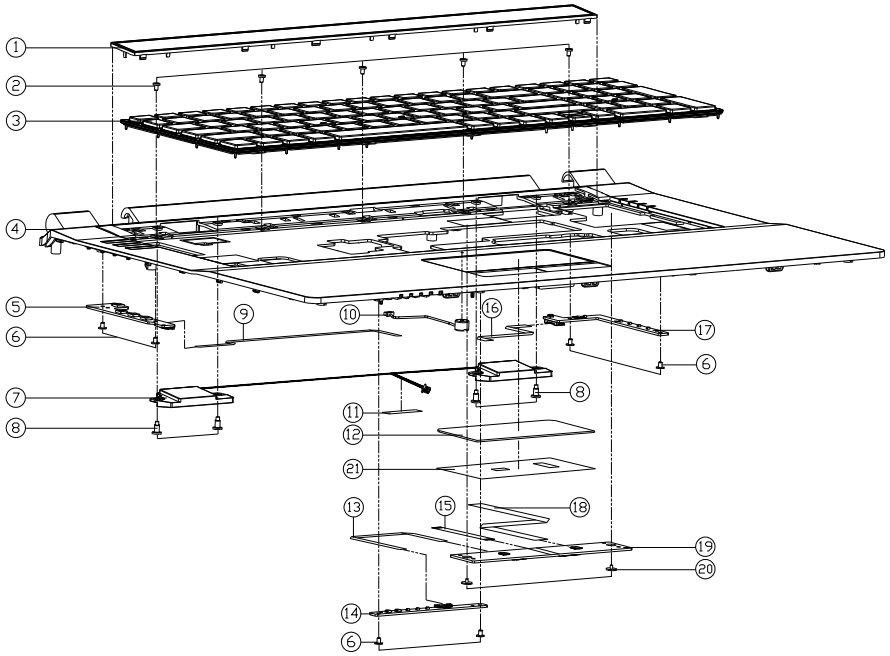
Part List Illustration Location

The following table indicates where to find the appropriate part list illustration.

Table A- 1
Part List Illustration Location

Parts	
Top	*page A - 3*
Bottom	*page A - 4*
LCD	*page A - 5*
HDD	*page A - 6*
2nd HDD	*page A - 7*
DVD	*page A - 8*
COMBO	*page A - 9*

Top



ITEM	PART NAME	PART NO	REMARK
1	CENTER COVER MODULE W370ET	6-42-W3708-202	
2	SCREW M2*3L K1 BZ ICT NY (DD=#5,DT=0.4)	6-35-B6120-3RD	
3	WIN8 K/B USA(BLACK& FRAME(US) MODULE W350STQ/W370ST	6-79-W370STOK-010-W	
4	TOP CASE MODULE (DNCY1 SPEAKER KAPOK) W370ST	6-39-W37S2-011-N	
5	POWER SWITCH BOARD V1.0 W370ST	6-77-W37SS-D01	
6	SCREW M2*3L K1 NI ICT NY (DD=#4.5,DT=0.4)	6-35-B1120-3RE	
7	SPK+CABLE FRONT RAL SD420 152 220W 4? ED2H18AA P150EN	6-23-5P15E-0S1	
8	SCREW M2*6.2L NI ICT NY FOR SPEAKER	6-35-Z1120-6R2	
9	FFC CABLE FOR MB TO POWER BOARD 8PIN (HS) W370ET	6-43-W3700-052	
10	MIC &#x0000;&#x0000;&#x0000;&

Bottom

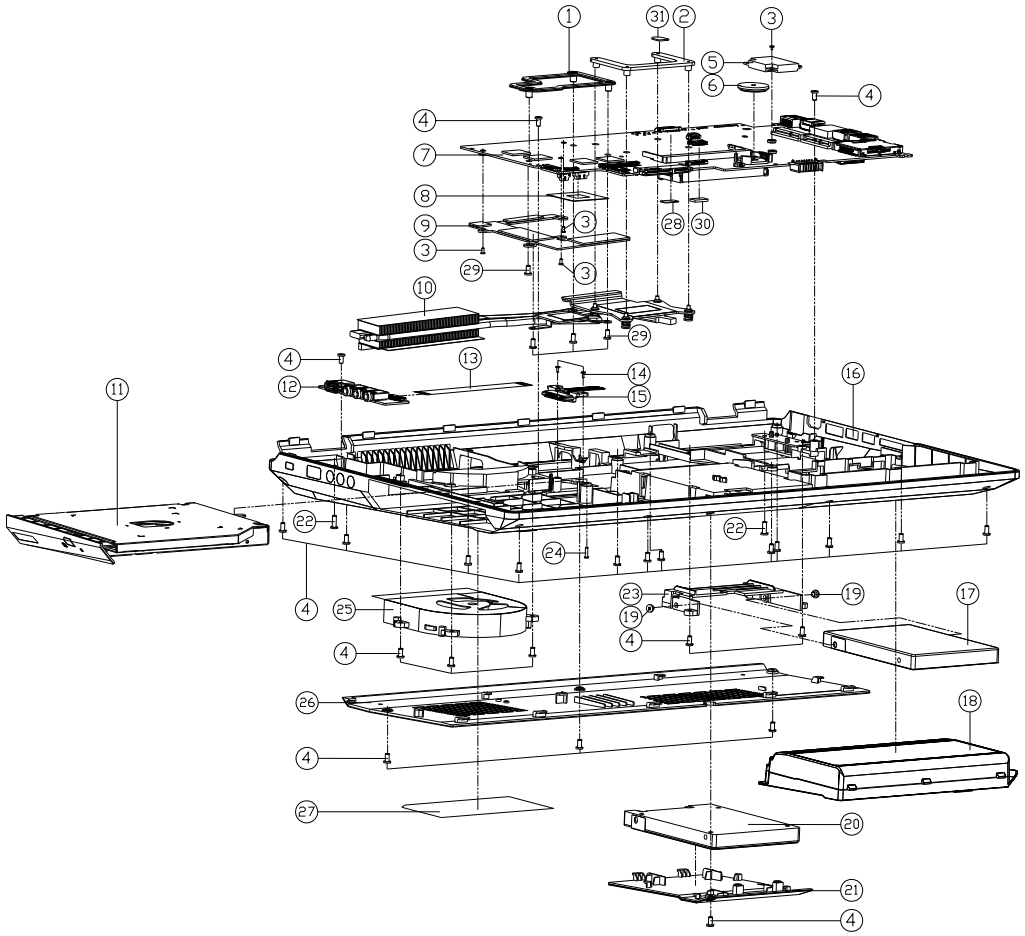
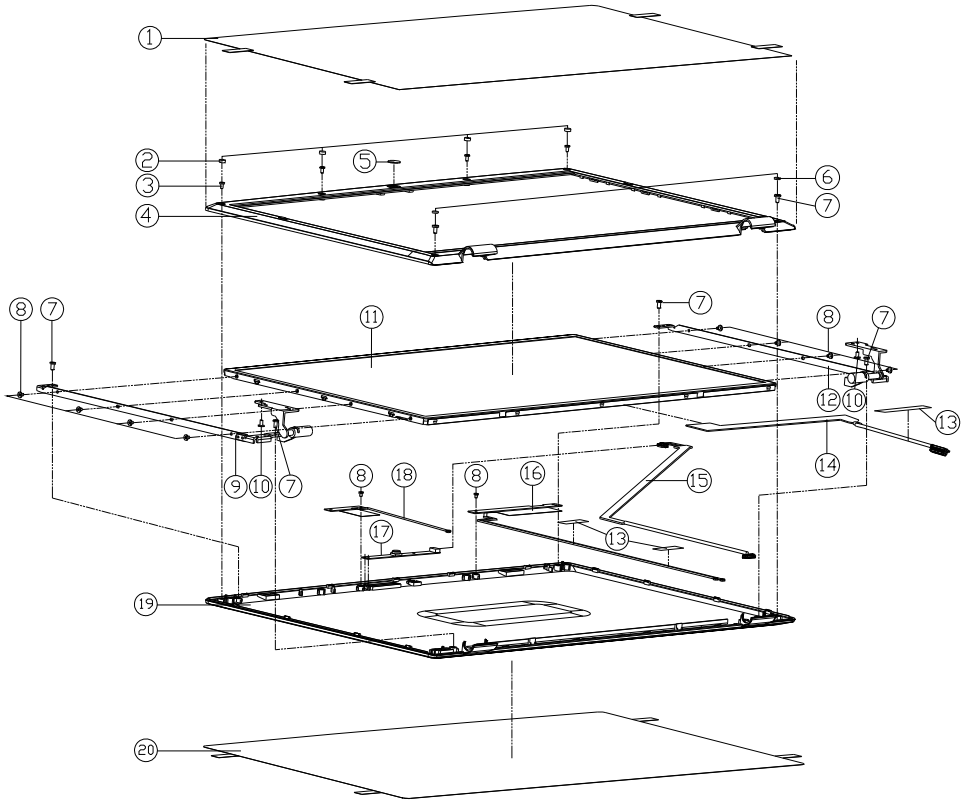


Figure A - 2
Bottom

ITEM	PART NAME	PART NO	REMARK
1	VGA SUPPORTER SECC W150ERQ	6-33-W15ES-012	
2	CPU SUPPORT BRACKET SECC T=1.5 P150HM	6-33-X510S-011	
3	SCREW M2*3L KI NI ICT NY (OD=ø4.5,DT=0.4)	6-35-B1120-3RE	
4	SCREW M2.5*6L K BZ ICT NY	6-35-B2125-6RA	
5	[illegible]	6-88-M77C2-4220	(OPTION)
5	[illegible]	6-88-P17EF-4200	(OPTION)
5	[illegible]	6-88-W25SF-4200	(OPTION)
5	[illegible]	6-88-W345F-9400	(OPTION)
5	[illegible]	6-88-W345F-8700	(OPTION)
5	[illegible]	6-88-P3702-9400	(OPTION)
5	[illegible]	6-88-P3702-7000	(OPTION)
6	BATTERY 3V 210MA CR2032 (MITSUBISHI)	6-23-62015-607	
7	MAIN BOARD V3.0 W370ST	6-77-W370ST00-D03	
8	VGA CHIP NYLAR(29*29 0.15T) N14E-GE W350ST	6-40-W35SS-010	
9	VRAM THERMAL MODULE W350STQ	6-31-W35SN-102	
10	CPU THERMAL MODULE W350STQ	6-31-W35SS-101	
11	W/O ODD ASS'Y W370ET (OPTION)	6-79-W370ET0Z-000	(OPTION)
11	SATA DVD SUPER MULTI ASS'Y (OPTION)	6-79-W370ST0Q-010	(OPTION)
11	SATA BLU-RAY COMBO ASS'Y (OPTION)	6-79-W370ET0W-000	(OPTION)
12	AUDIO BOARD V1.0 W350STQ	6-77-W35S8-D01	
13	FFC CABLE FOR AUDIO BOARD TO MB 20P (45) W370ET	6-43-W3700-022	
14	SCREW M2*5L KI(T=0.8 D=4.0) BK/Z ICT NY	6-35-B6120-5R0	
15	ODD CON+PCB+W/CABLE 6TFC CABLE 600MM W370ET	6-23-FW370-011	
16	BOTTOM CASE MODULE W370ET	6-39-W3703-012	
17	W/HDD W/ 2HDD ASSY W370ET	6-79-W370ET0J-030	(OPTION)
17	W/O 2HDD ASS'Y W370ET	6-79-W370ET0J-040	(OPTION)
18	[illegible]	6-87-W370S-4271	
19	SCREW M3*4L KI BZ ICT NY (D=4.8 T=0.5)	6-35-B6130-4RB	
20	W/HDD ASS'Y W370ET	6-79-W370ET0J-020	(OPTION)
20	W/O HDD ASS'Y W370ET	6-79-W370ET0J-010	(OPTION)
21	HDD COVER MODULE W370ET	6-42-W370J-102	
22	SCREW M2.5*8L KI BK/Z NY ICT	6-35-B6125-8R0	
23	SECOND HDD HOUSING PC+ABS GINAR BC31 W370ET	6-42-W370J-020	
24	SCREW M2*8L KI BK/Z ICT NY	6-35-B6120-8R0	
25	FAN MODULE (ADDA) W370ET	6-31-W370S-101	
26	CPU COVER MODULE W370ET	6-42-W3708-102	
27	PRODUCT LABEL FOR W370ST	6-45-W370ST03-010	
28	GASKET(L12*W4*H0.7) FOR USB BOARD M540N	6-47-00190-12J	
29	SCREW M2.5*5L KI NI ICT NY	6-35-B1125-5RA	
30	BTW MB RUBBER (13.7*8.5) SILICON W370ST	6-42-W37SS-010	
31	BRACKET RUBBER (10*8) SILICON W370ST	6-47-W37SS-020	

LCD

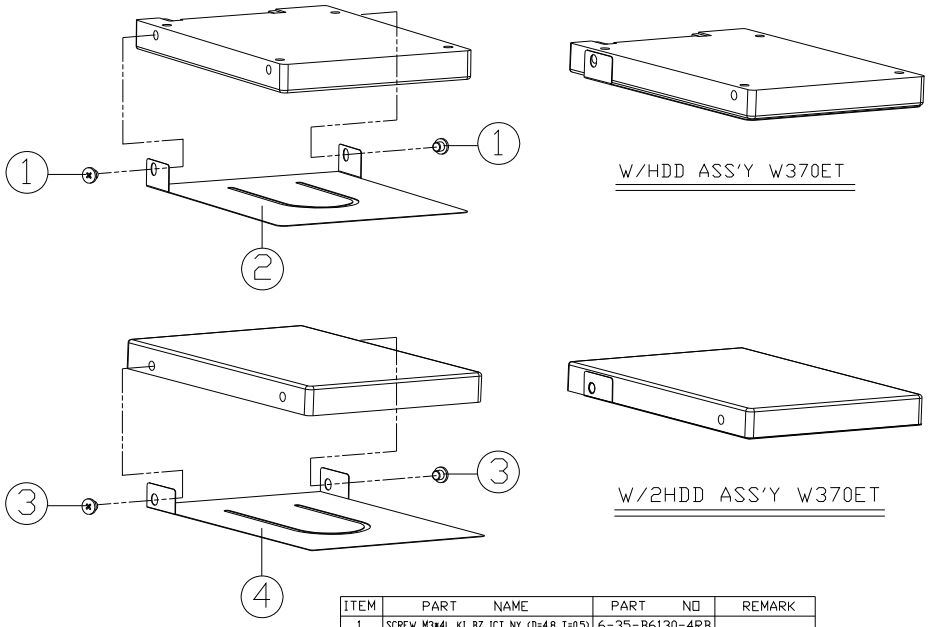


ITEM	PART NAME	PART NO	REMARK
1	LCD FRONT CASE PROTECT MYLAR PET B7110	6-40-B7118-012	
2	FRONT COVER (CHANGE) RUBBER SLICON 60 B7110	6-47-B7111-033	
3	SCREW M2*5L K(KT=0.8 D=4.0) BK/Z ICT NY	6-35-B6120-5R0	
4	LCD FRONT COVER MODULE (CHANGE) B7110	6-39-B7111-013	
5	LCD-RING PMMA ONCREASE AS THE AREA 3~4MM CANCEL SPOTTED	6-40-B7111-012	OPTION
6	FRONT RUBBER (Ø5*T=1.15) SILICON 60(PVT) B7110	6-47-B7111-021	
7	SCREW M2.5*5L K1 BK/Z ICT NY-	6-35-B6125-5RA	
8	SCREW M2*3L K1 NI ICT NY (OD=Ø4.5,DT=0.4)	6-35-B1120-3RE	
9	HINGE L (SECC+SK7) W370ET	6-33-W3701-0L0	
10	SCREW M2.5*6L K BZ ICT NY	6-35-82125-6RA	
11	LCD 17.3" HD+ LG LP173WD1-TLF1 (LED) 6.0 MM	6-50-NA160-L08	OPTION
11	LCD 17.3" FHD CHIMEI N173HGE-L11 (LED) 6.0 MM	6-50-NB260-D01	OPTION
11	LCD 17.3" HD+ CHIMEI N173DGE-L02 (GLARE TYPE) (LED) 5.0MM	6-50-NA158-D00	OPTION
12	HINGE R (SECC+SK7) W370ET	6-33-W3701-0R0	
13	TAPE MYLAR (C),MYLAR M550J	6-40-M55J2-030	
14	WIRE CABLE FOR LCD 30 6V1 40P 150MM (CN/CN) COMPLIANCE	6-43-W3701-010-1C	
15	WIRE CABLE 6PIN FOR CCD 310MM (HL) W370ST	6-43-W37ST-010	
16	ANTENNA WWAN COMB 2CH WO-PCB 2.4G/2.5GHZ/5G WIRE-150MM	6-23-7W370-010	
17	INC CAMERA CMOS 1M (1280*720*2.2K HD DVP(8P) W/MIRROR	6-88-W21EC-5102	OPTION
17	INC CAMERA USB2.0 1M (1280*720*2.2K HD DVP(8P) W/MIRROR	6-88-W15EC-4905	OPTION
18	ANTENNA WWAN 2CH WO-PCB 2.4G/2.5GHZ/5G WIRE-150MM	6-23-7W370-020	
19	LCD BACK COVER MODULE W370ET	6-39-W3701-020	
20	LCD BACK CASE PROTECT MYLAR PET B7110	6-40-B7111-012	

Figure A - 3
LCD

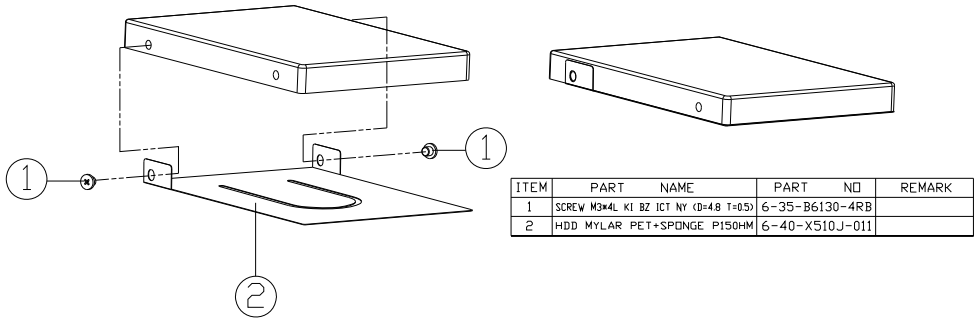
HDD

Figure A - 4
HDD



ITEM	PART NAME	PART NO	REMARK
1	SCREW M3*4L KI BZ ICT NY (D=4.8 T=0.5)	6-35-B6130-4RB	
2	HDD MYLAR PET+SPONGE W370ET	6-40-W370J-011	
3	SCREW M3*4L KI BZ ICT NY (D=4.8 T=0.5)	6-35-B6130-4RB	
4	HDD MYLAR PET+SPONGE P150HM	6-40-X510J-011	

2nd HDD

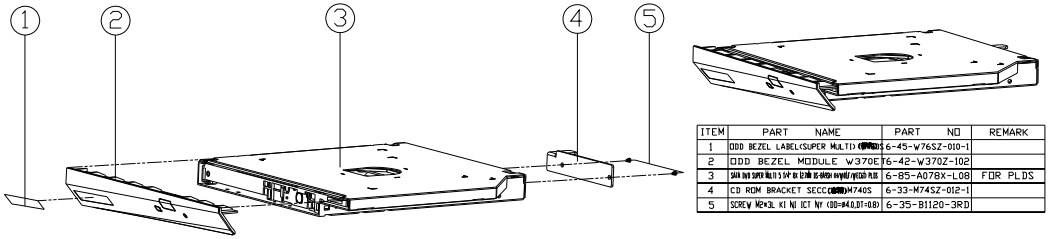


ITEM	PART NAME	PART NO	REMARK
1	SCREW M3*4L KI BZ ICT NY (D=4.8 T=0.5)	6-35-B6130-4RB	
2	HDD MYLAR PET+SPONGE P150HM	6-40-X510J-011	

Figure A - 5
2nd HDD

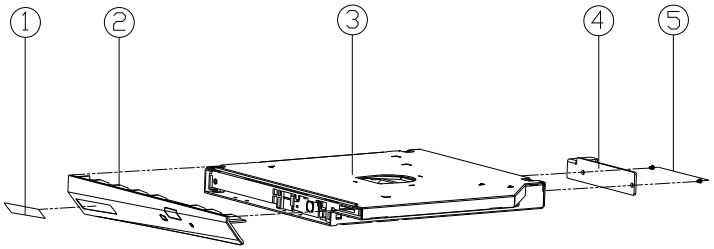
DVD

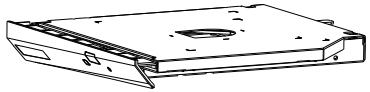
Figure A - 6
DVD



ITEM	PART NAME	PART NO	REMARK
1	ODD BEZEL LABEL(SUPER MULTI)	6-45-W76SZ-010-1	
2	ODD BEZEL MODULE W370E	76-42-W370Z-102	
3		6-85-A078X-L08	FOR PLDS
4	CD ROM BRACKET SECC	6-33-M74SZ-012-1	
5	SCREW	6-35-B1120-3RD	

COMBO





ITEM	PART NAME	PART NO	REMARK
1	ODD BEZEL LABEL(SUPER MULTI)	6-45-W76SW-010	
2	ODD BEZEL MODULE W370E	6-42-W370Z-102	
3		6-35-B076X-P23	FOR PANASONIC
3		6-35-B076X-1P0	FOR PANASONIC
3		6-35-B076X-P24	FOR PANASONIC
4	CD ROM BRACKET SECC	6-33-M74SZ-012-1	
5		6-35-B1120-3RD	

Figure A - 7
COMBO

Appendix B: Schematic Diagrams

This appendix has circuit diagrams of the W370ST notebook's PCB's. The following table indicates where to find the appropriate schematic diagram.

Diagram - Page	Diagram - Page	Diagram - Page
System Block Diagram - Page B - 2	*VGA NVDD Decoupling - Page B - 22*	*VDD3, VDD5 - Page B - 41*
Haswell 1/7 - Page B - 3	*Lynx 1/9 - Page B - 23*	*1.5V or 1.35V / 0.75VS, 1.5VS - Page B - 42*
Haswell 2/7 - Page B - 4	*Lynx 2/9 - Page B - 24*	*1.05VS, 1.05V_M, 1.05V_LAN_M - Page B - 43*
Haswell 3/7 - Page B - 5	*Lynx 3/9 - Page B - 25*	*Power V-Core - Page B - 44*
Haswell 4/7 - Page B - 6	*Lynx 4/9 - Page B - 26*	
Haswell 5/7 - Page B - 7	*Lynx 5/9 - Page B - 27*	*VGA NVVDD, PEX_VDD - Page B - 45*
Haswell 6/7 - Page B - 8	*Lynx 6/9 - Page B - 28*	*VGA NVVDD, PEX_VDD - Page B - 45*
Haswell 7/7 - Page B - 9	*Lynx 7/9 - Page B - 29*	*AC-In, Charger - Page B - 47*
DDR3 SO-DIMM A_0 - Page B - 10	*Lynx 8/9 - Page B - 30*	*W370/350STQ Audio Board - Page B - 48*
DDR3 SO-DIMM B_0 - Page B - 11	*Lynx 9/9 - Page B - 31*	*W370/350STQ Power LED Board - Page B - 49*
DDR3 SO-DIMM A_1 - Page B - 12	*Mini PCIE, Fan, Audio Con - Page B - 32*	*W370/350STQ Click Board - Page B - 50*
PS8625 - Page B - 13	*USB Charge, CCD, TPM, Multi-Con - Page B - 33*	*W370ST Power Switch Board - Page B - 51*
Panel, Inverter, CRT - Page B - 14		
VGA PCI-E Interface - Page B - 15	*ESATA/USB3.0 Connector - Page B - 34*	*W350STQ Power Switch Board - Page B - 52*
VGA Frame Buffer Interface - Page B - 16	*Card Reader / LAN RTL8411 - Page B - 35*	*W370ST LID / VGA LED Board - Page B - 53*
VGA Frame Buffer A - Page B - 17	*SATA HDD, VLED CON, LID SW - Page B - 36*	*W350STQ LID / VGA LED Board - Page B - 54*
VGA Frame Buffer A - Page B - 18	*HDMI, RJ45 - Page B - 37*	*W350STQ VGA / WLAN SW Board - Page B - 55*
VGA Frame Buffer B - Page B - 19	*Audio Codec VT1802S - Page B - 38*	*POWER ON SEQUENCE - Page B - 56*
VGA Frame Buffer B - Page B - 20	*KBC ITE IT8587 - Page B - 39*	
VGA I/O - Page B - 21	*5V, 5VS, 3.3V, 3VS, 3.3VM - Page B - 40*	

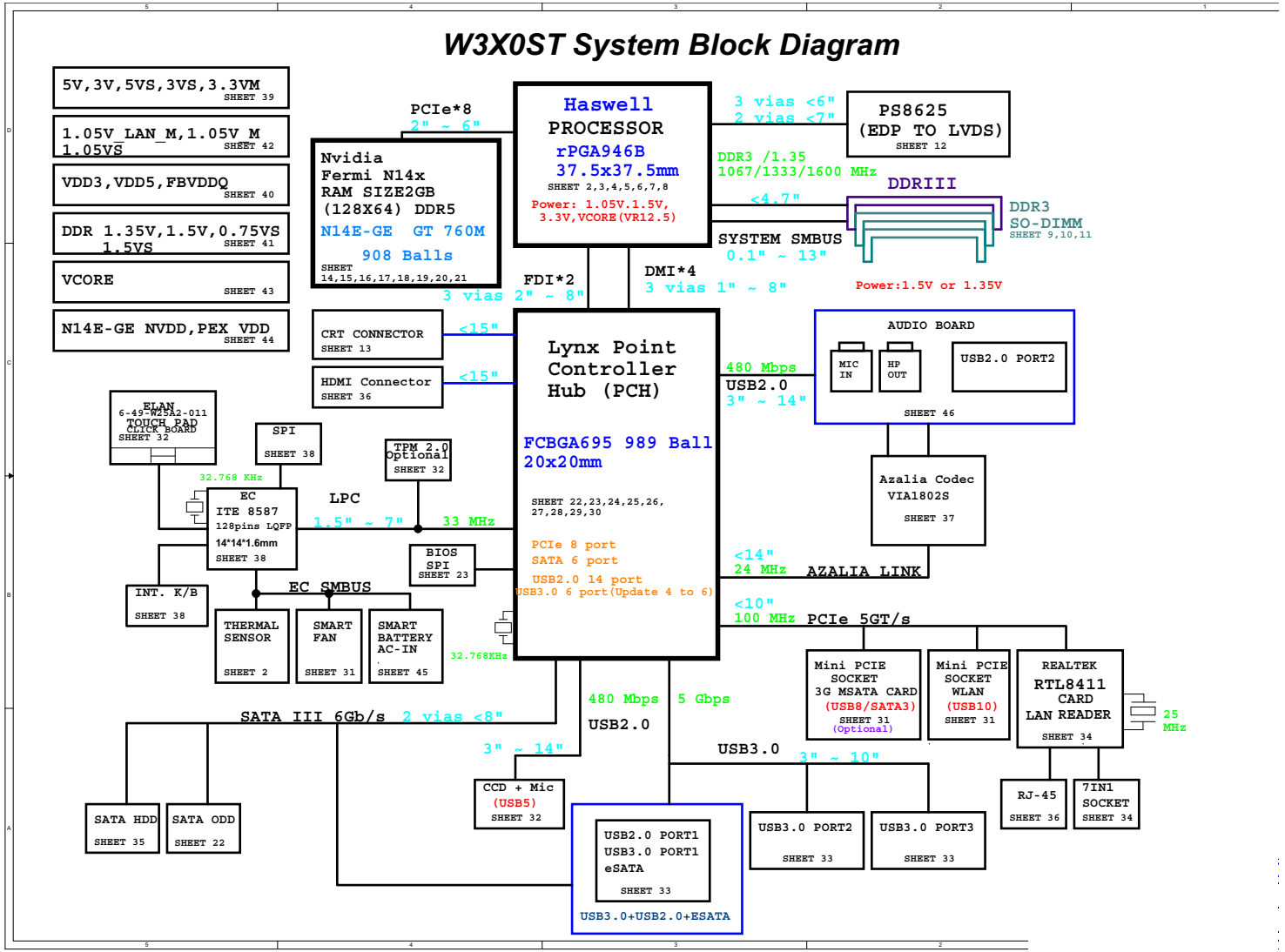
Table B - 1
Schematic Diagrams

Version Note

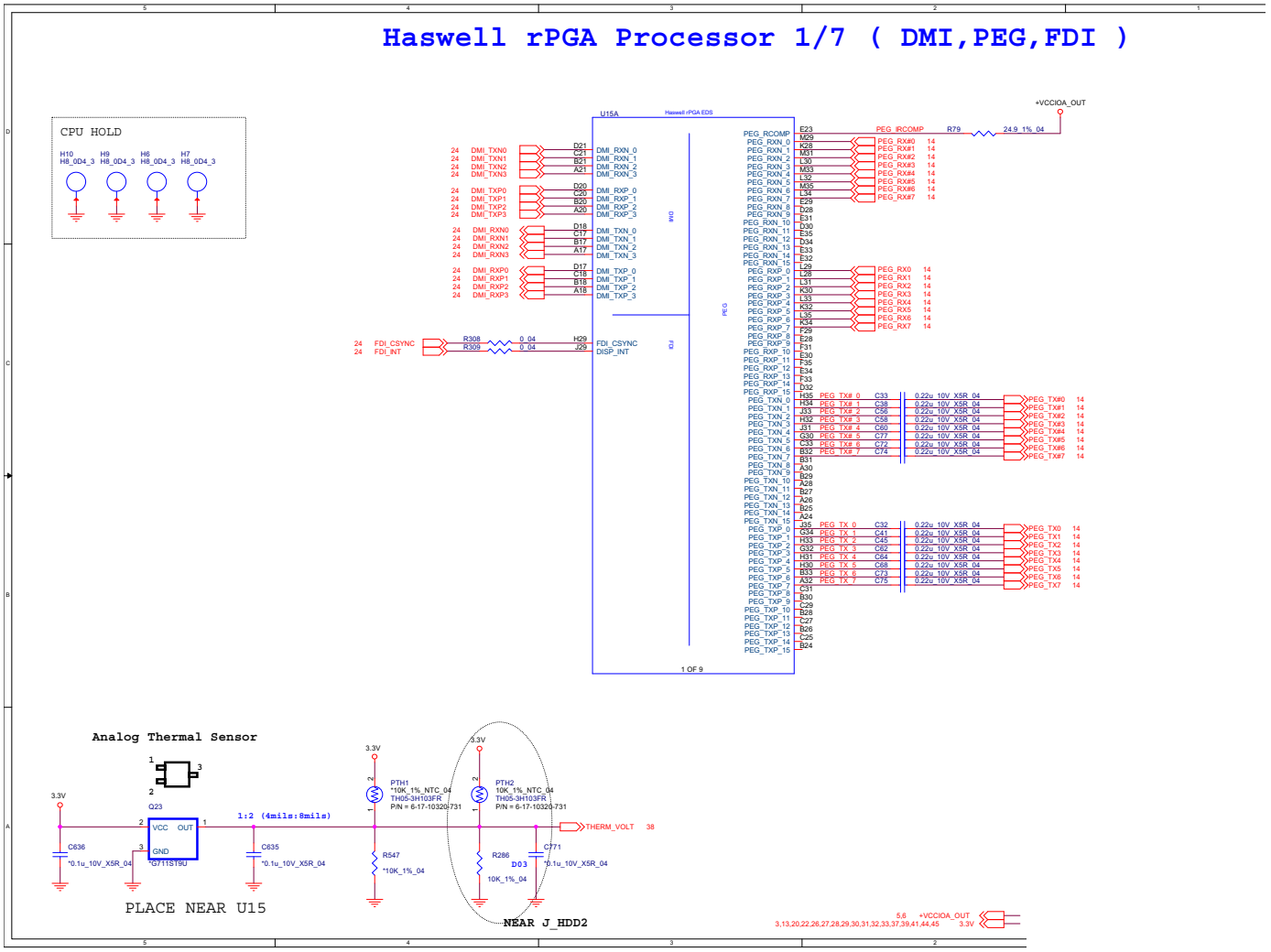
The schematic diagrams in this chapter are based upon version 6-7P-W35S9-003. If your mainboard (or other boards) are a later version, please check with the Service Center for updated diagrams (if required).

System Block Diagram

Sheet 1 of 55
System Block Diagram



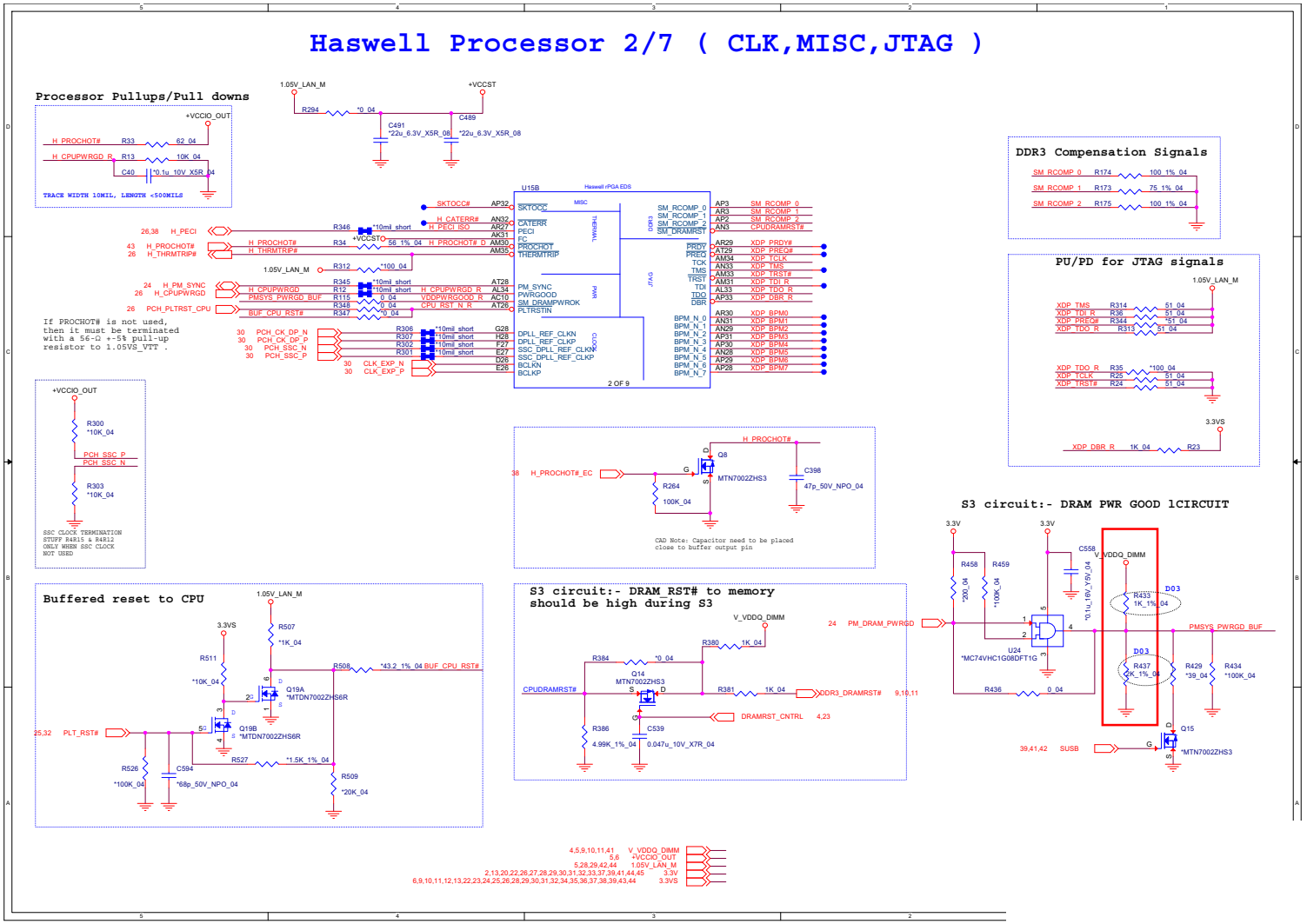
Haswell 1/7



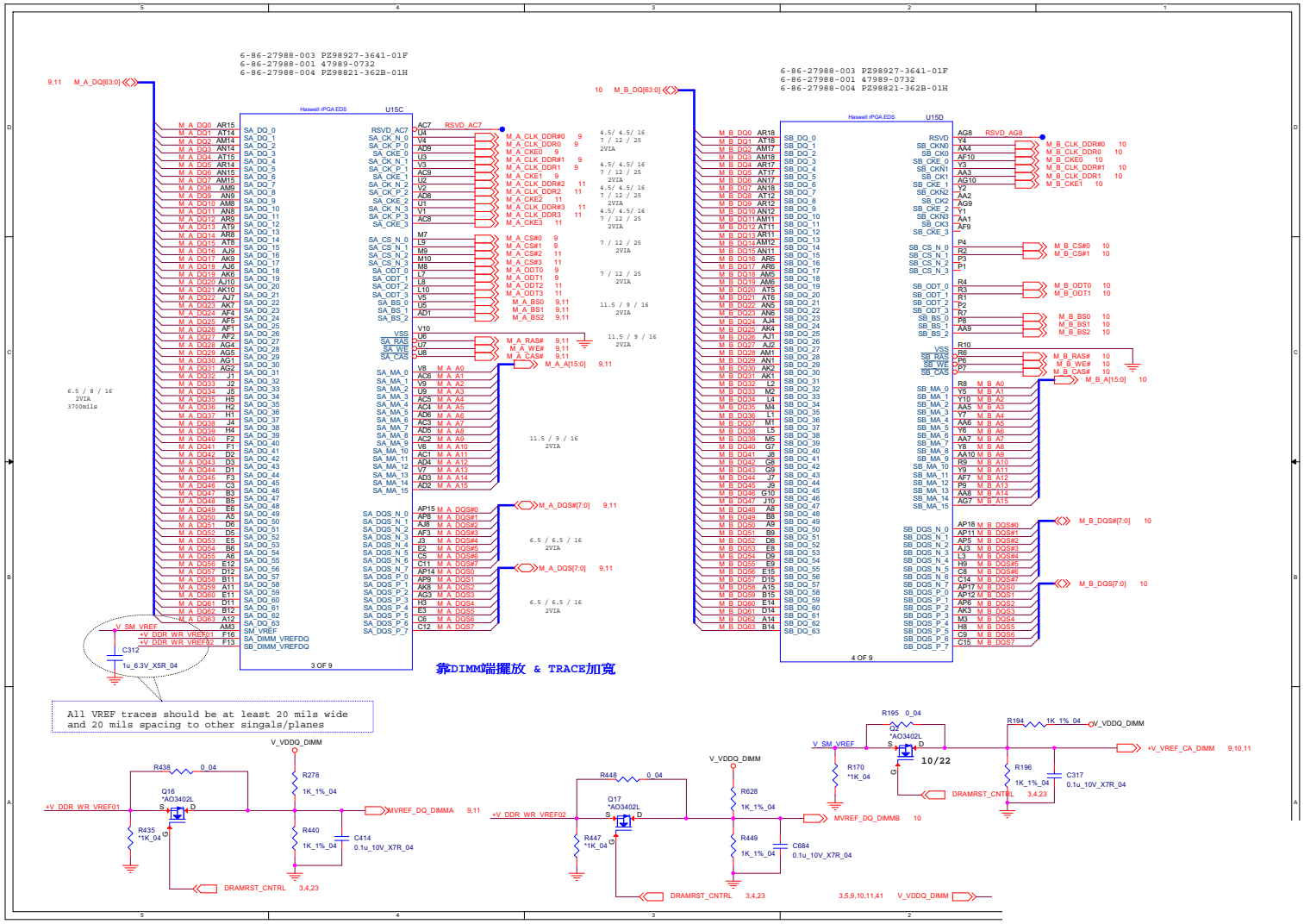
Sheet 2 of 55
Haswell 1/7

Haswell 2/7

Sheet 3 of 55
Haswell 2/7


Haswell Processor 2/7 (CLK,MISC,JTAG)
Processor Pullups/Pull downs
DDR3 Compensation Signals
PU/PD for JTAG signals
S3 circuit:- DRAM PWR GOOD lCIRCUIT
Buffered reset to CPU
S3 circuit:- DRAM_RST# to memory should be high during S3
U15B
2 OF 9
If PROCHOT# is not used, then it must be terminated with a 56-Ω ±-5% pull-up resistor to 1.05VS_VTT .
SSC CLOCK TERMINATION STUFF R4R15 & R4R12 ONLY WHEN SSC CLOCK NOT USED
CAD Note: Capacitor need to be placed close to buffer output pin

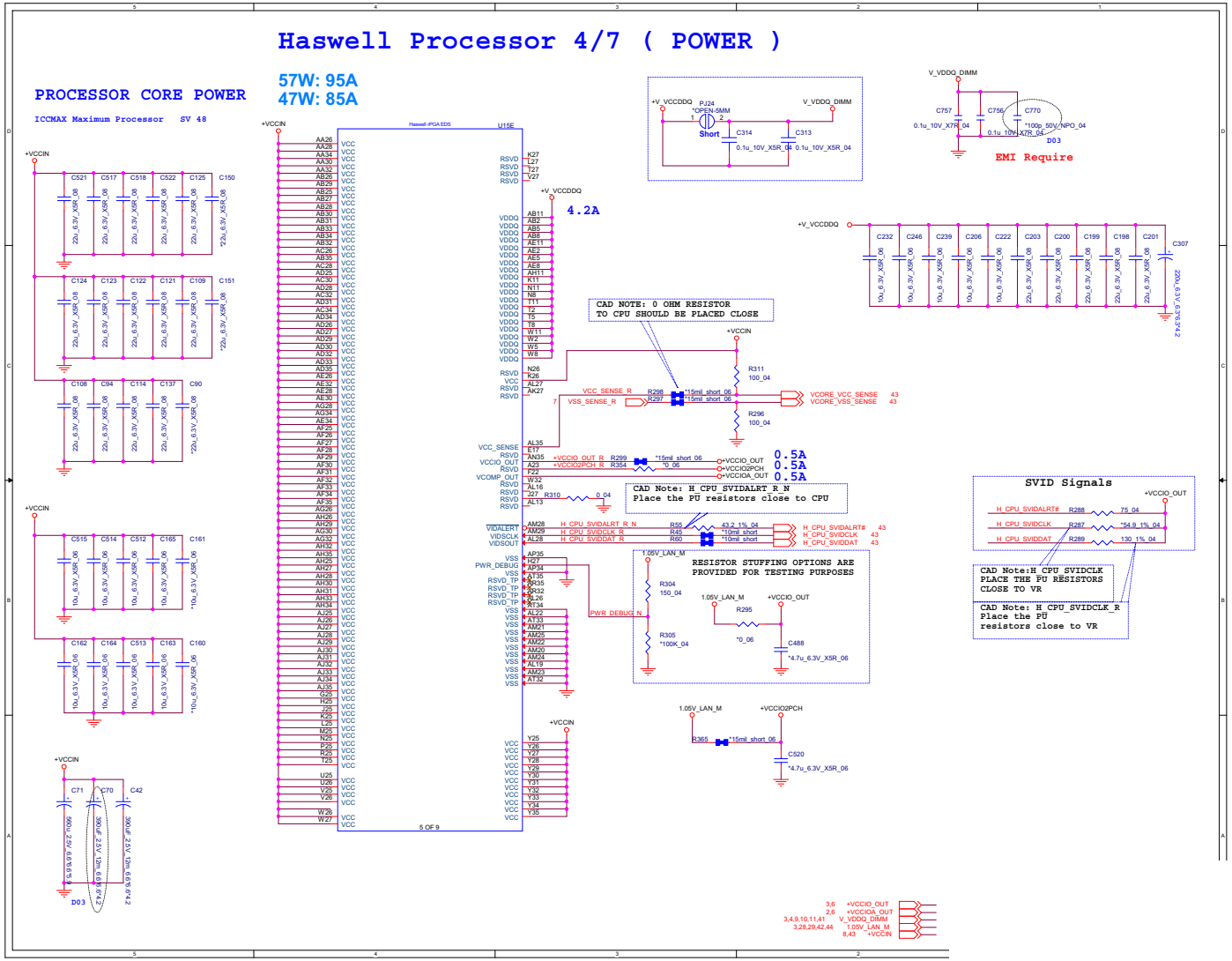
Haswell 3/7



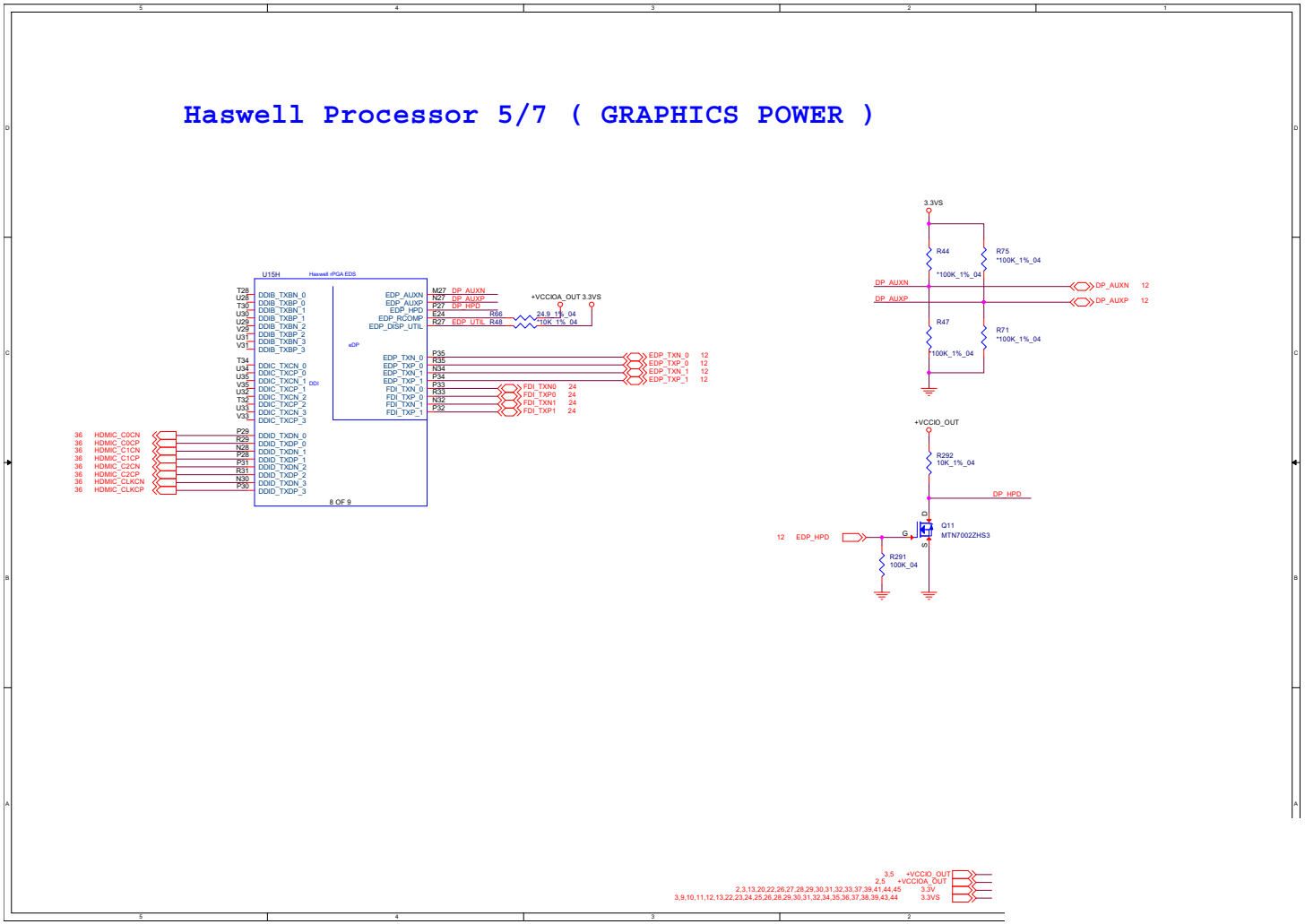
Sheet 4 of 55
Haswell 3/7

Haswell 4/7

Sheet 5 of 55
Haswell 4/7


Haswell Processor 4/7 (POWER)
57W: 95A
47W: 85A
PROCESSOR CORE POWER
ICCMAX Maximum Processor SV 48
4.2A
EMI Require
CAD NOTE: 0 OHM RESISTOR TO CPU SHOULD BE PLACED CLOSE
CAD Note: H_CPU_SVIDALRT_R_N Place the PU resistors close to CPU
RESISTOR STUFFING OPTIONS ARE PROVIDED FOR TESTING PURPOSES
SVID Signals
CAD Note:H_CPU_SVIDCLK PLACE THE PU RESISTORS CLOSE TO VR
CAD Note: H_CPU_SVIDCLK_R Place the PU resistors close to VR
0.5A
0.5A
0.5A

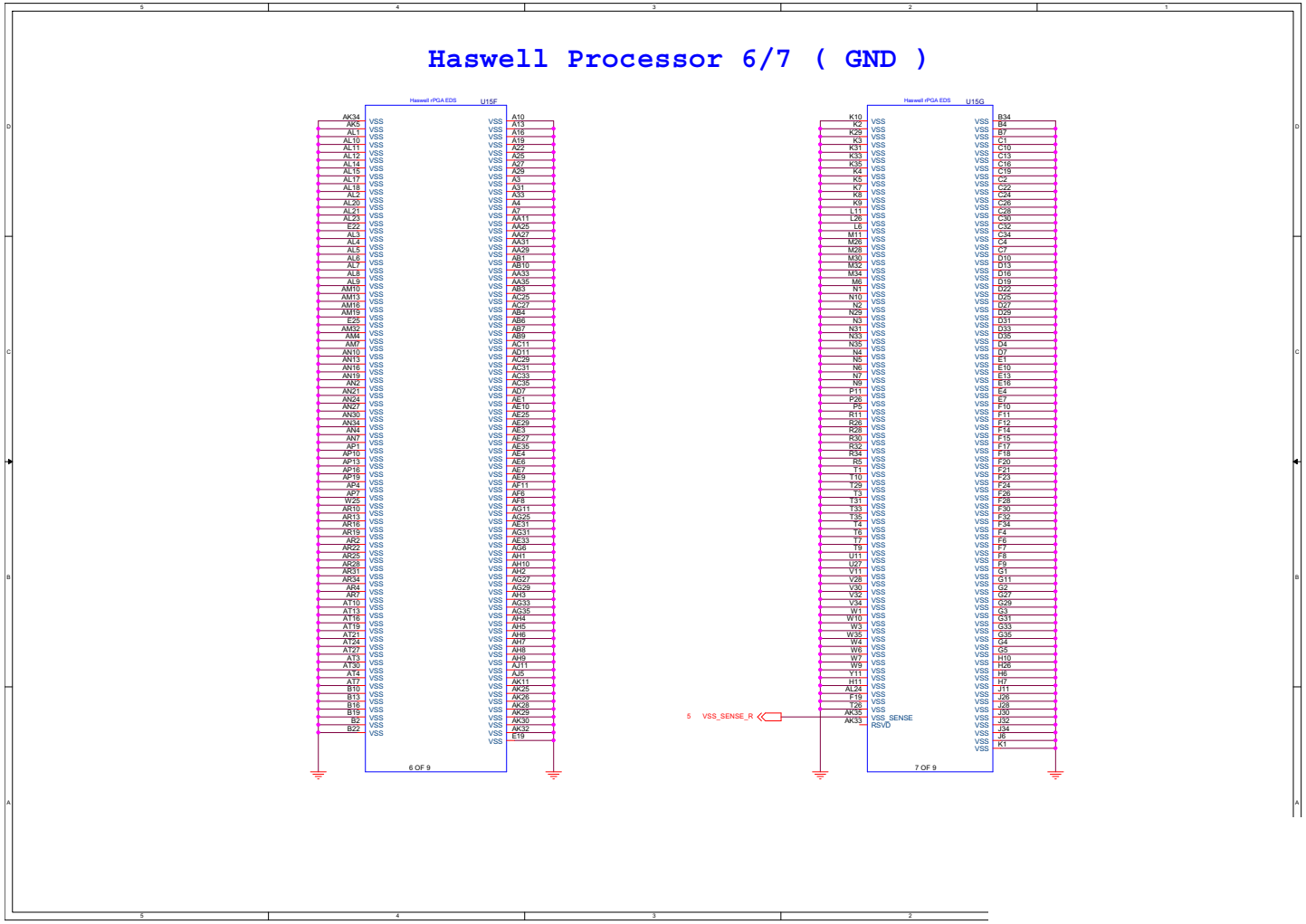
Haswell 5/7



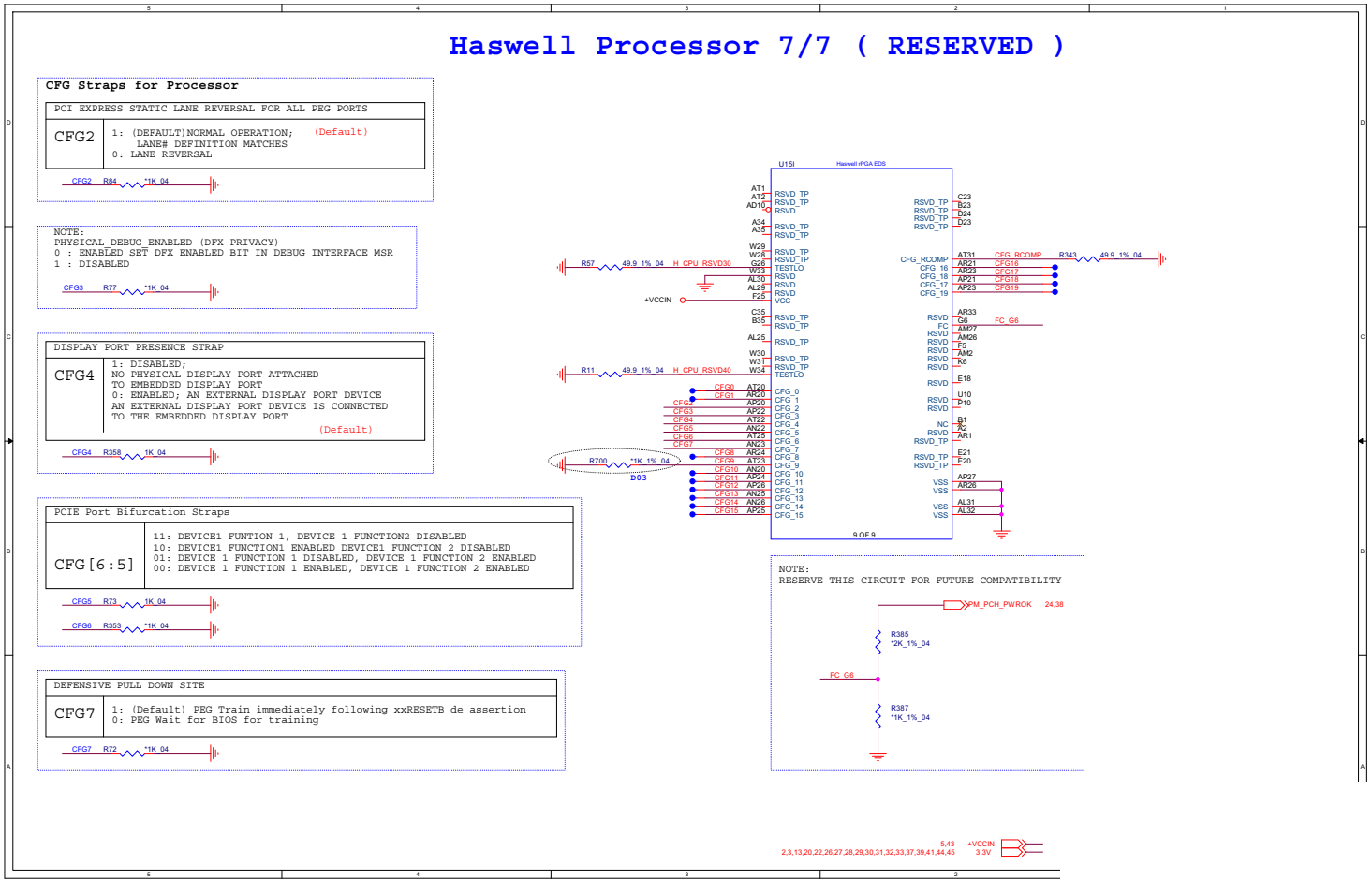
Sheet 6 of 55
Haswell 5/7

Haswell 6/7

Sheet 7 of 55
Haswell 6/7



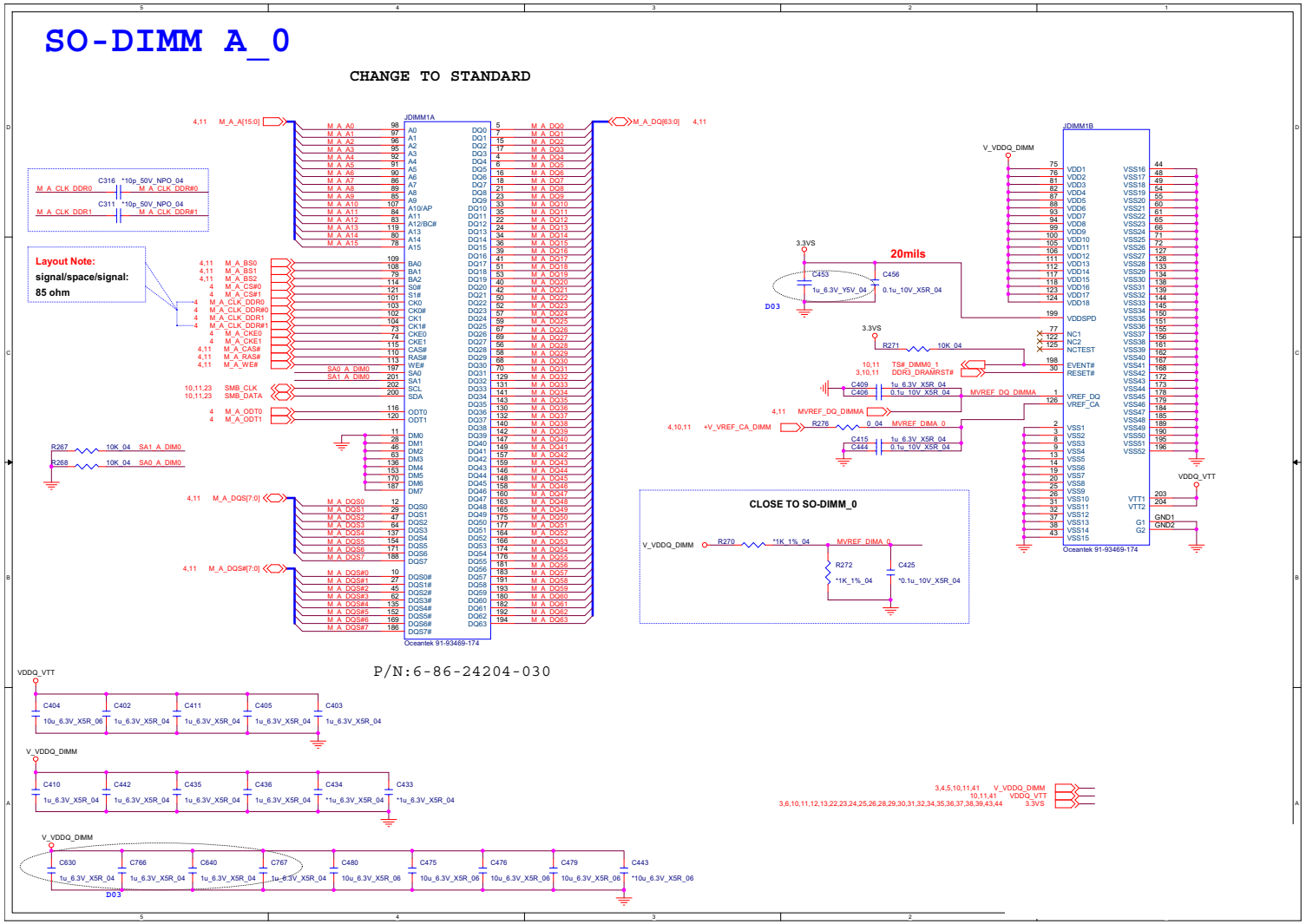
Haswell 7/7


Haswell Processor 7/7 (RESERVED)
CFG Straps for Processor
PCI EXPRESS STATIC LANE REVERSAL FOR ALL PEG PORTS
CFG2
1: (DEFAULT)NORMAL OPERATION; (Default)
LANE# DEFINITION MATCHES
0: LANE REVERSAL
NOTE:
PHYSICAL_DEBUG_ENABLED (DFX PRIVACY)
0 : ENABLED SET DFX ENABLED BIT IN DEBUG INTERFACE MSR
1 : DISABLED
DISPLAY PORT PRESENCE STRAP
CFG4
1: DISABLED;
NO PHYSICAL DISPLAY PORT ATTACHED
TO EMBEDDED DISPLAY PORT
0: ENABLED; AN EXTERNAL DISPLAY PORT DEVICE
AN EXTERNAL DISPLAY PORT DEVICE IS CONNECTED
TO THE EMBEDDED DISPLAY PORT
(Default)
PCIE Port Bifurcation Straps
CFG[6:5]
11: DEVICE1 FUNTION 1, DEVICE 1 FUNCTION2 DISABLED
10: DEVICE1 FUNCTION1 ENABLED DEVICE1 FUNCTION 2 DISABLED
01: DEVICE 1 FUNCTION 1 DISABLED, DEVICE 1 FUNCTION 2 ENABLED
00: DEVICE 1 FUNCTION 1 ENABLED, DEVICE 1 FUNCTION 2 ENABLED
DEFENSIVE PULL DOWN SITE
CFG7
1: (Default) PEG Train immediately following xxRESETB de assertion
0: PEG Wait for BIOS for training
U15I
Haswell rPGA EDS
9 OF 9
NOTE:
RESERVE THIS CIRCUIT FOR FUTURE COMPATIBILITY
PM_PCH_PWROK
+VCCIN
3.3V

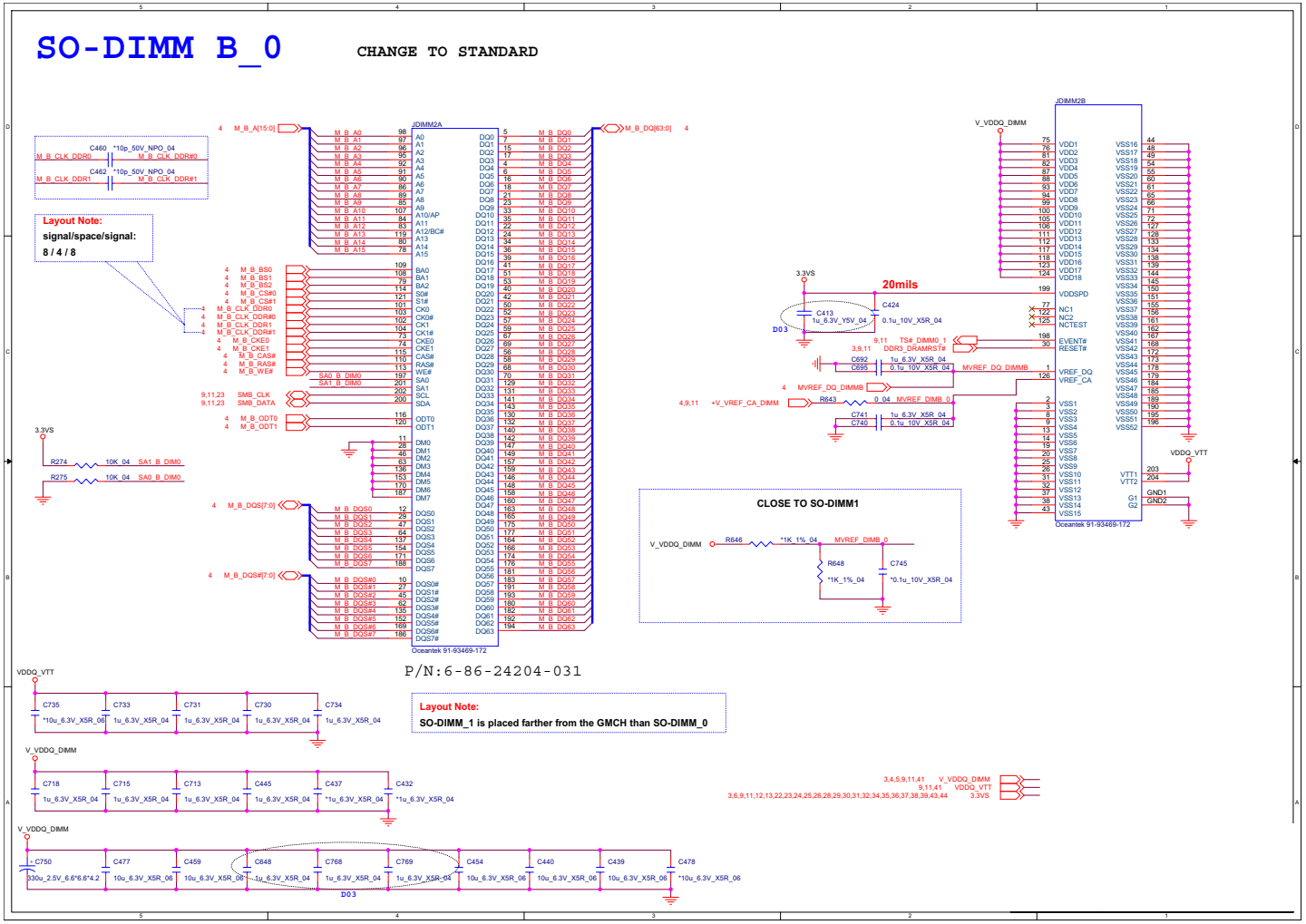
Sheet 8 of 55
Haswell 7/7

DDR3 SO-DIMM A_0

Sheet 9 of 55
DDR3 SO-DIMM A_0



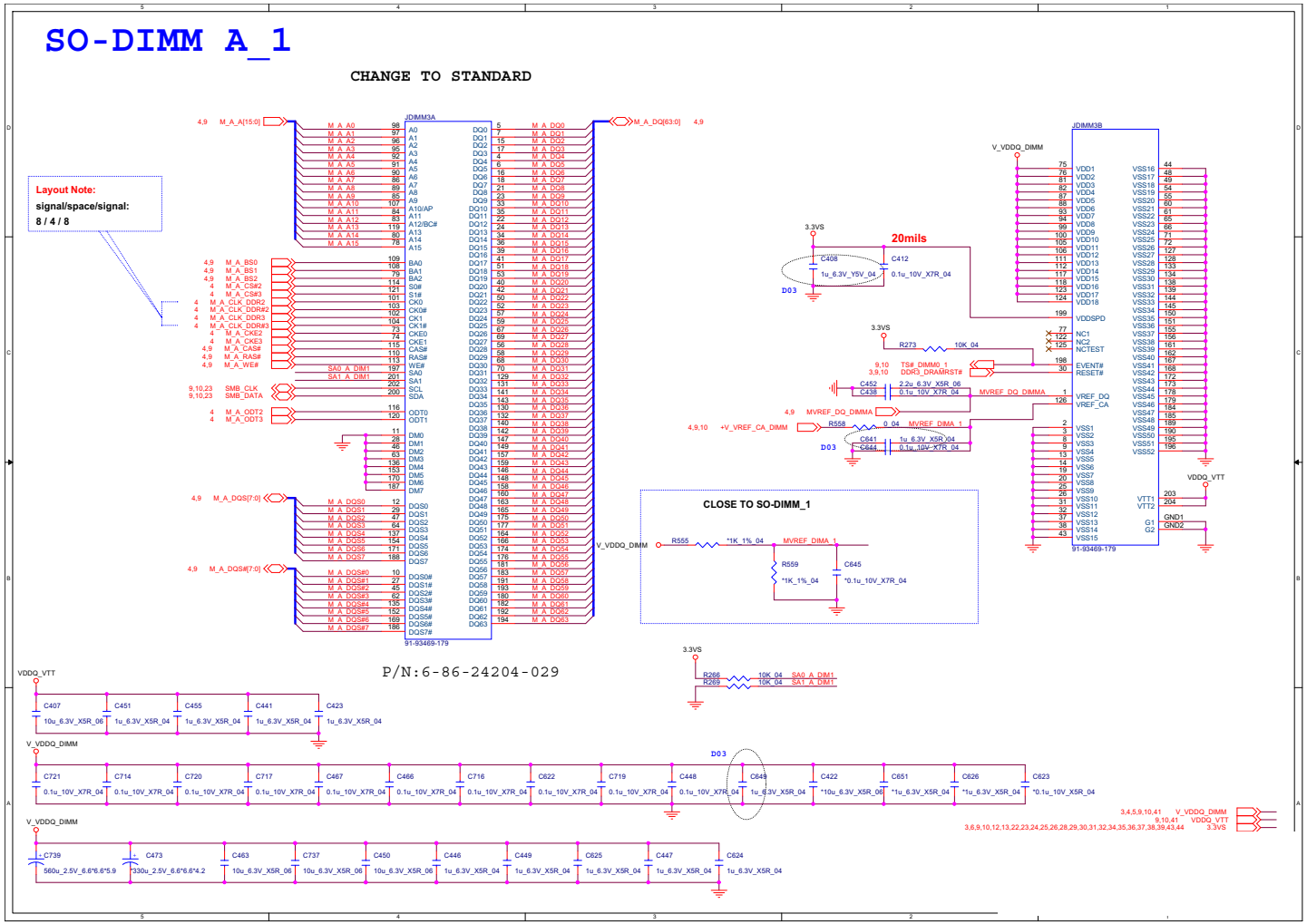
DDR3 SO-DIMM B_0



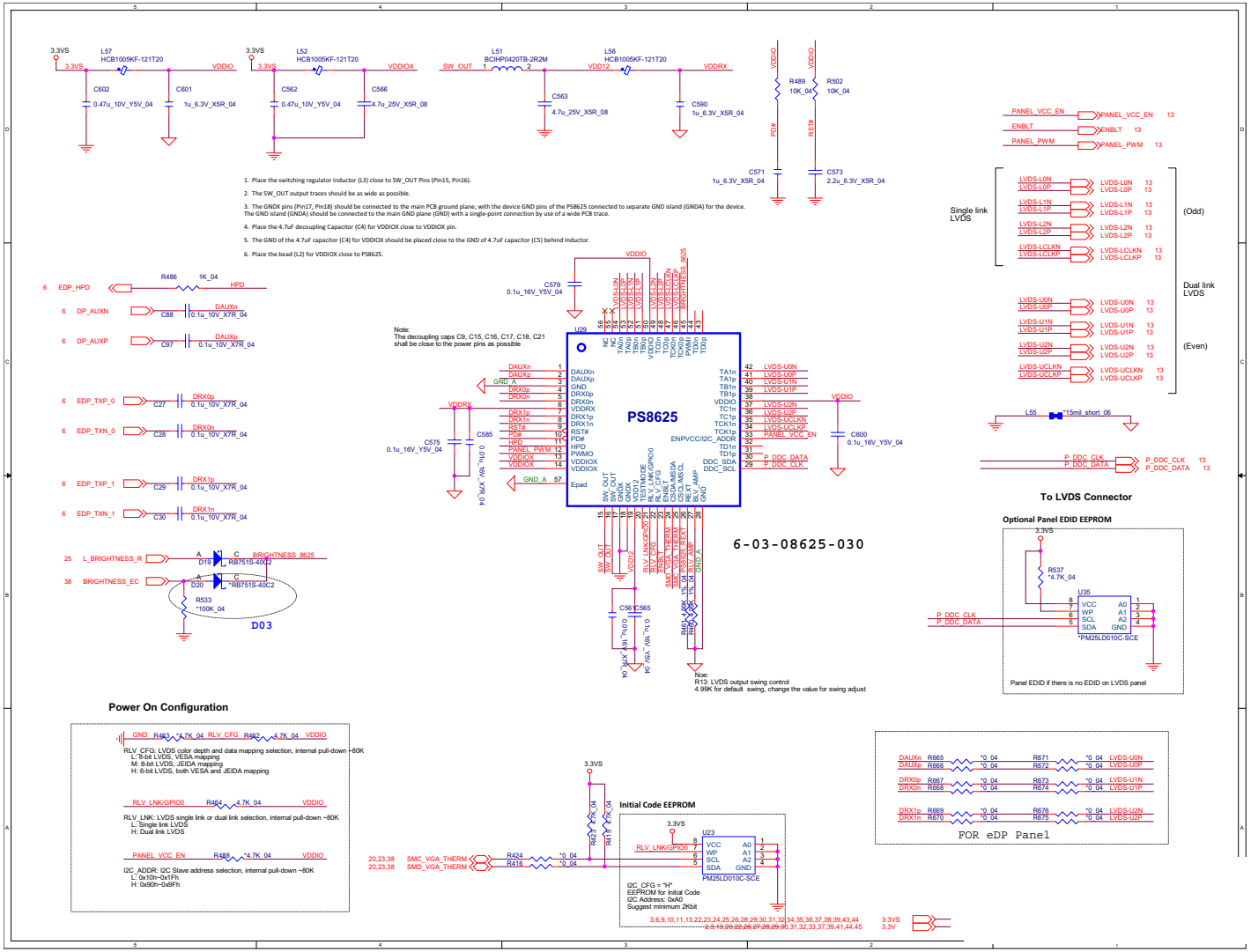
Sheet 10 of 55
DDR3 SO-DIMM B_0

DDR3 SO-DIMM A_1

Sheet 11 of 55
DDR3 SO-DIMM A_1

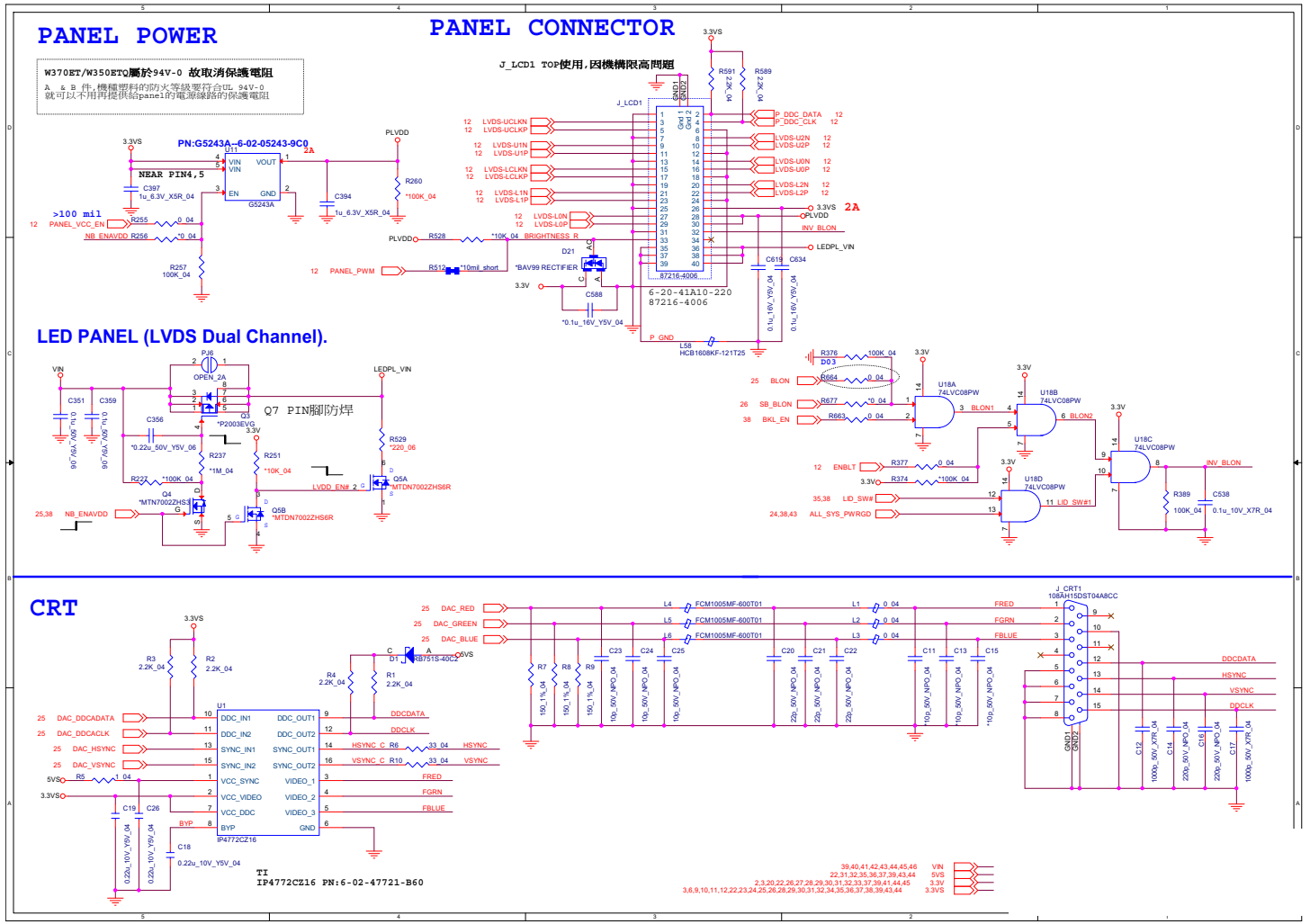


PS8625

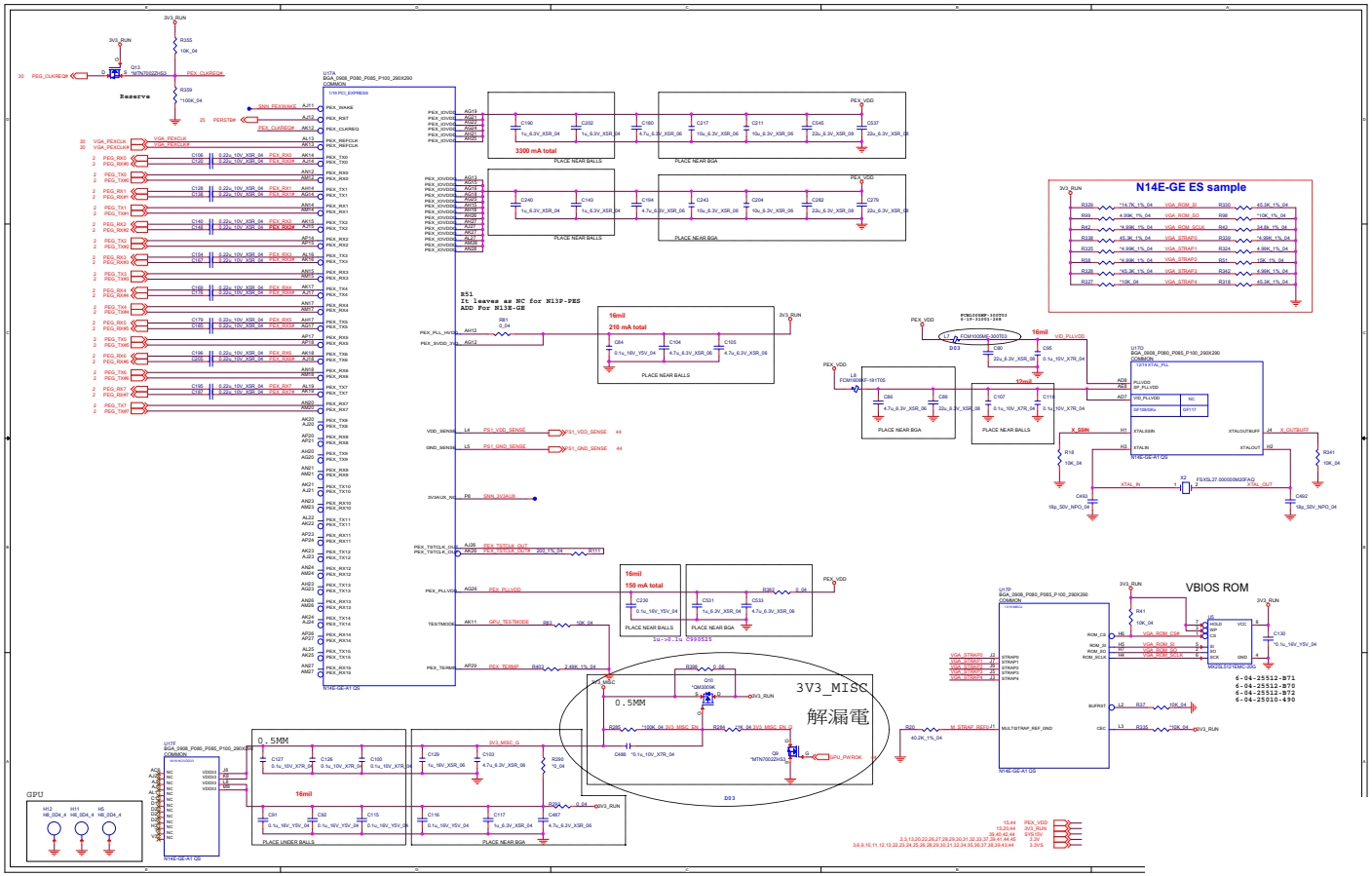

PS8625
6-03-08625-030
D03
To LVDS Connector
Optional Panel EDID EEPROM
Panel EDID if there is no EDID on LVDS panel
Power On Configuration
Initial Code EEPROM
FOR eDP Panel
Single link LVDS
Dual link LVDS
(Odd)
(Even)
1. Place the switching regulator inductor (L3) close to SW_OUT Pins (Pin15, Pin16).
2. The SW_OUT output traces should be as wide as possible.
3. The GNDX pins (Pin17, Pin18) should be connected to the main PCB ground plane, with the device GND pins of the PS8625 connected to separate GND island (GNDA) for the device. The GND island (GNDA) should be connected to the main GND plane (GND) with a single-point connection by use of a wide PCB trace.
4. Place the 4.7uF decoupling Capacitor (C4) for VDDIOX close to VDDIOX pin.
5. The GND of the 4.7uF capacitor (C4) for VDDIOX should be placed close to the GND of 4.7uF capacitor (C5) behind Inductor.
6. Place the bead (L2) for VDDIOX close to PS8625.
Note: The decoupling caps C9, C15, C16, C17, C18, C21 shall be close to the power pins as possible
Note: R13: LVDS output swing control 4.99K for default swing, change the value for swing adjust
RLV_CFG: LVDS color depth and data mapping selection, internal pull-down ~80K
L: 8-bit LVDS, VESA mapping
M: 8-bit LVDS, JEIDA mapping
H: 6-bit LVDS, both VESA and JEIDA mapping
RLV_LNK: LVDS single link or dual link selection, internal pull-down ~80K
L: Single link LVDS
H: Dual link LVDS
I2C_ADDR: I2C Slave address selection, internal pull-down ~80K
L: 0x10h~0x1Fh
H: 0x80h~0x9Fh
I2C_CFG = "H"
EEPROM for Initial Code
I2C Address: 0xA0
Suggest minimum 2Kbit

Panel, Inverter, CRT

Sheet 13 of 55
Panel, Inverter, CRT



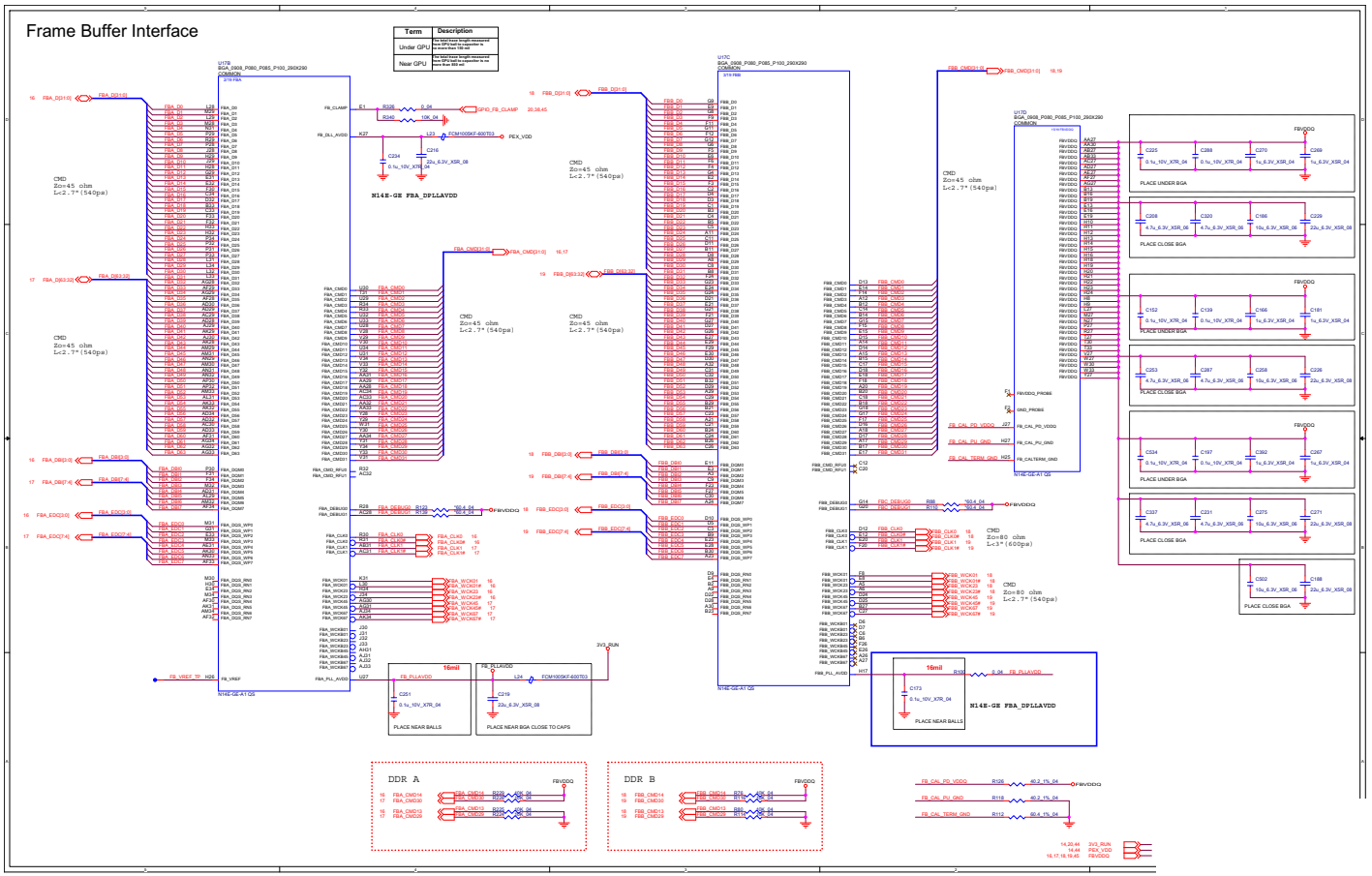
VGA PCI-E Interface



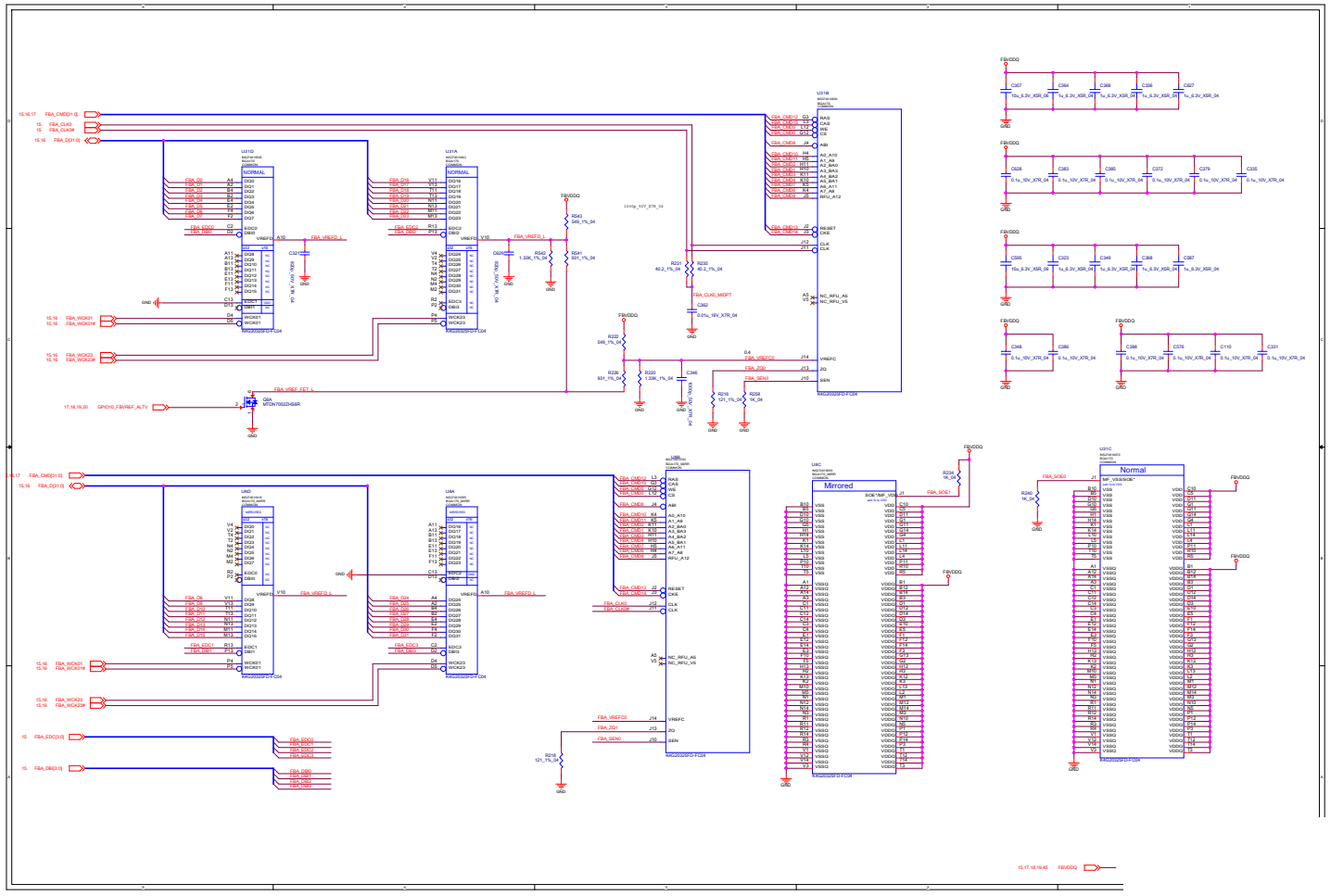
Sheet 14 of 55
VGA PCI-E
Interface

VGA Frame Buffer Interface

Sheet 15 of 55
VGA Frame Buffer Interface



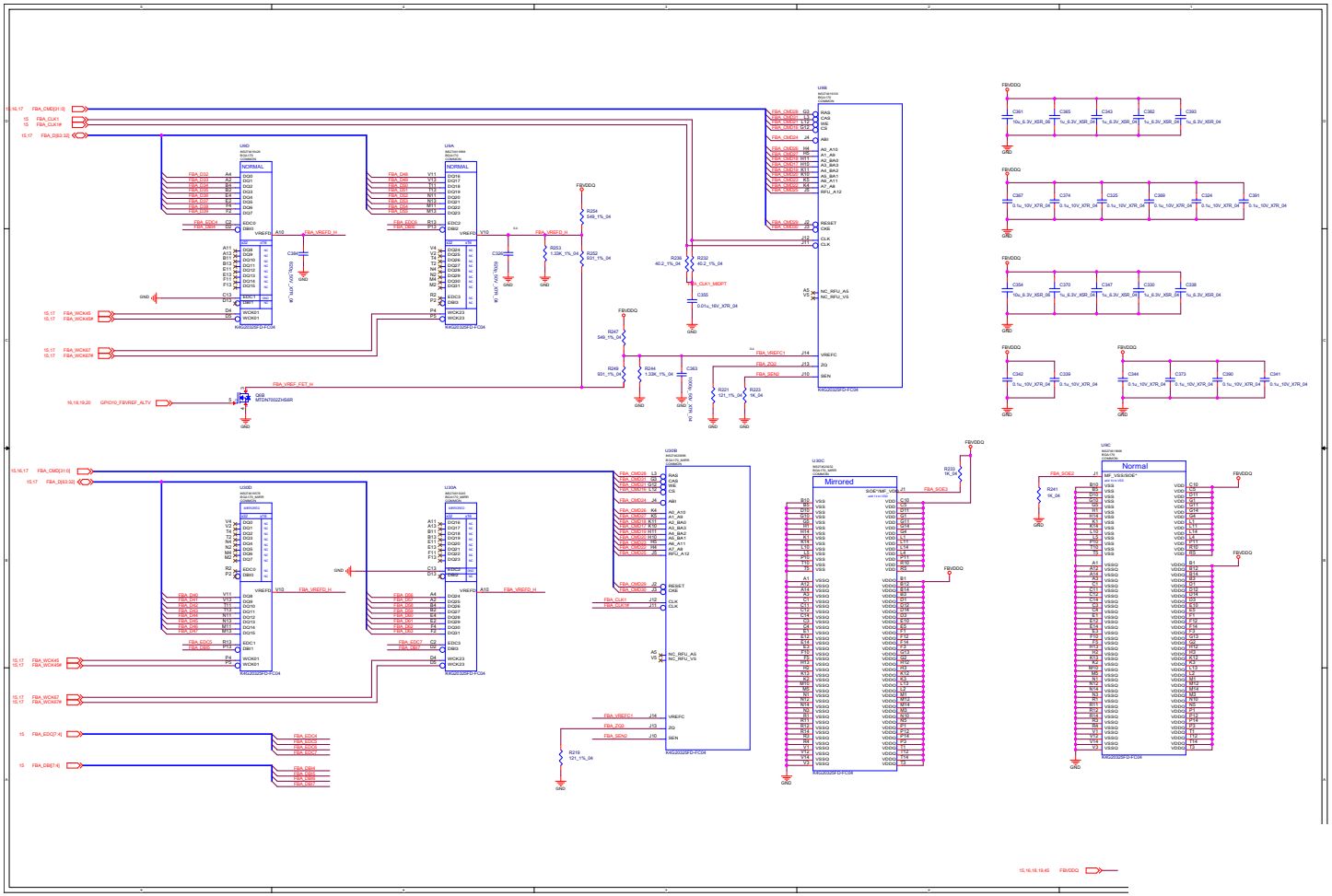
VGA Frame Buffer A



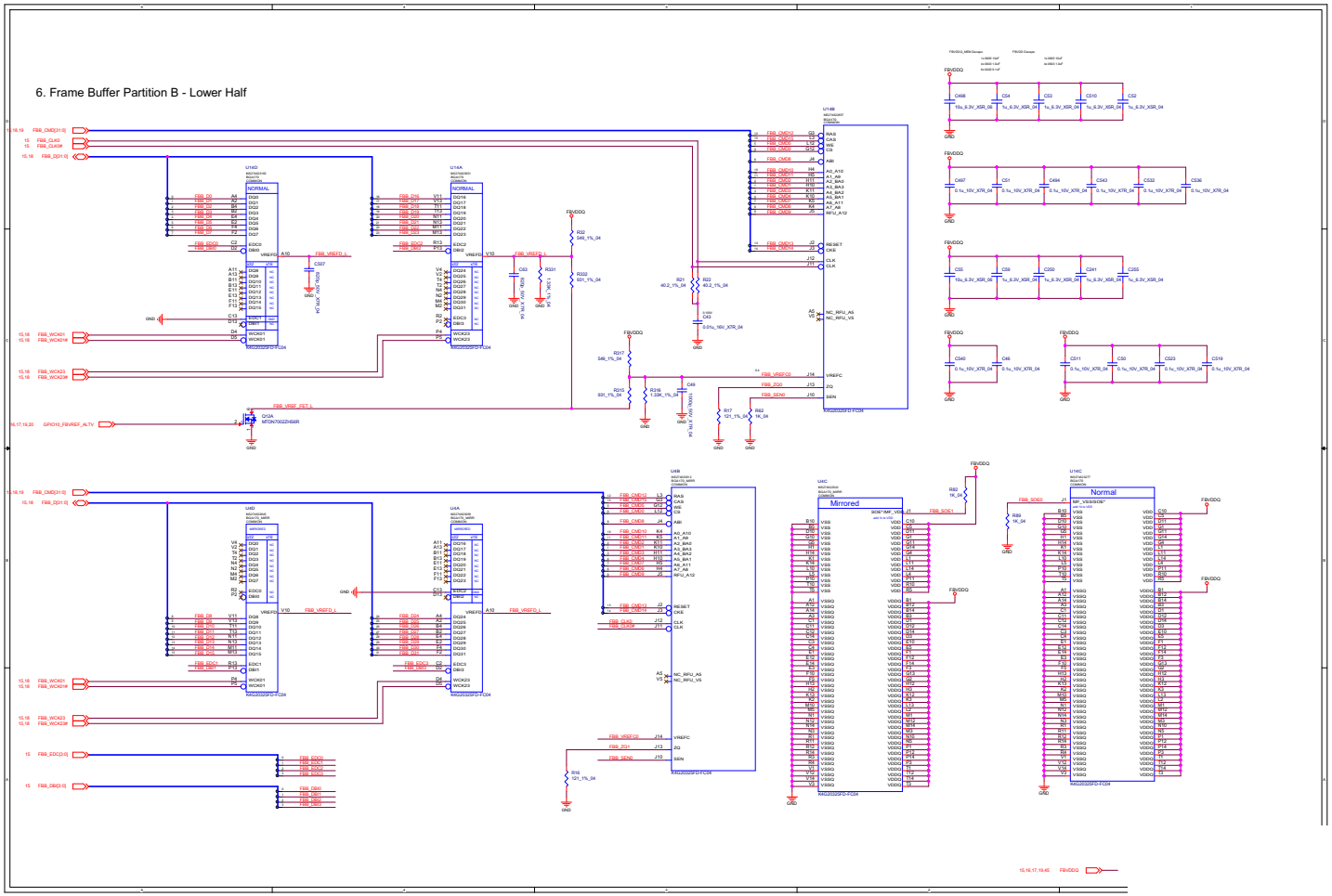
Sheet 16 of 55
VGA Frame Buffer A

VGA Frame Buffer A

Sheet 17 of 55
VGA Frame Buffer A



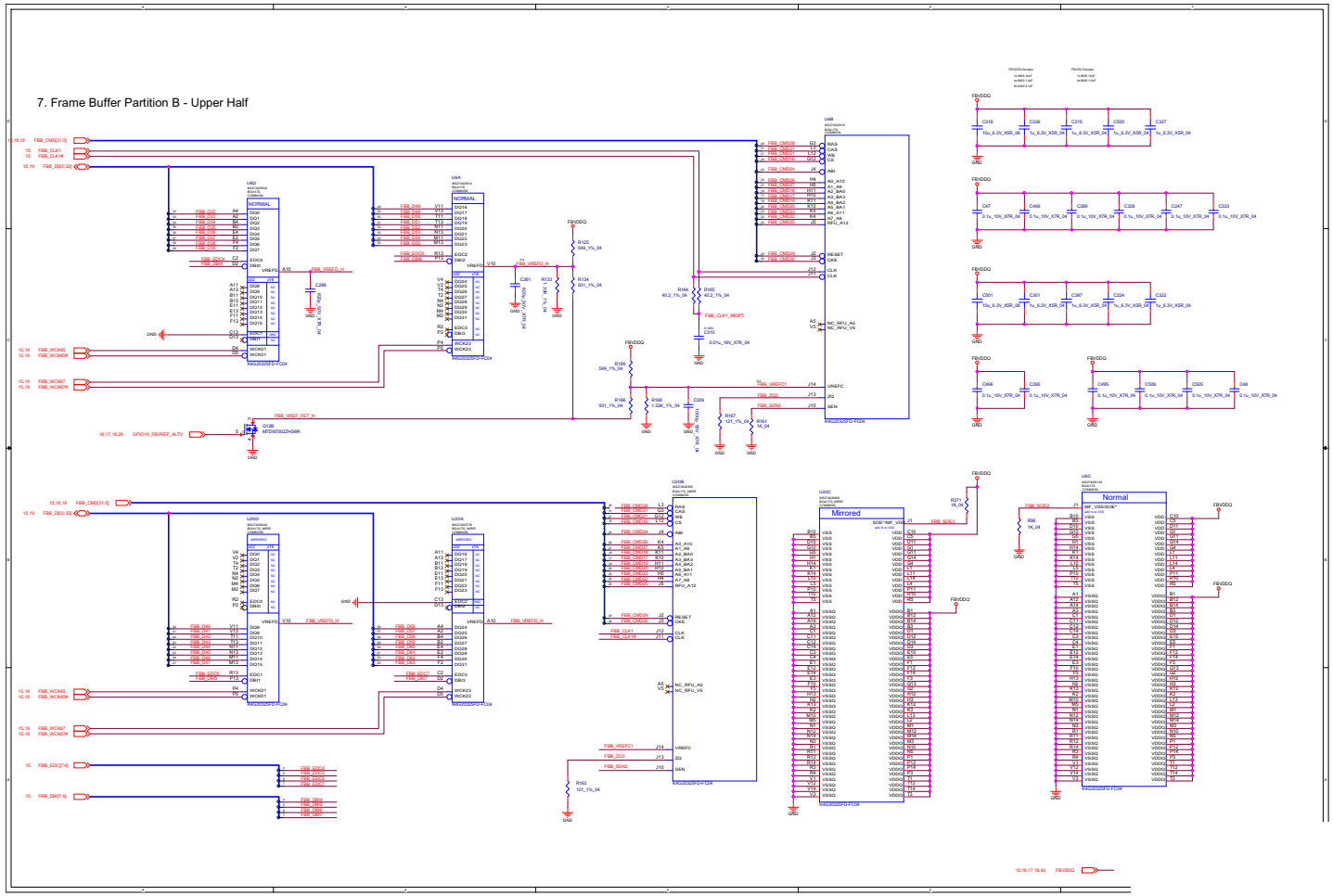
VGA Frame Buffer B



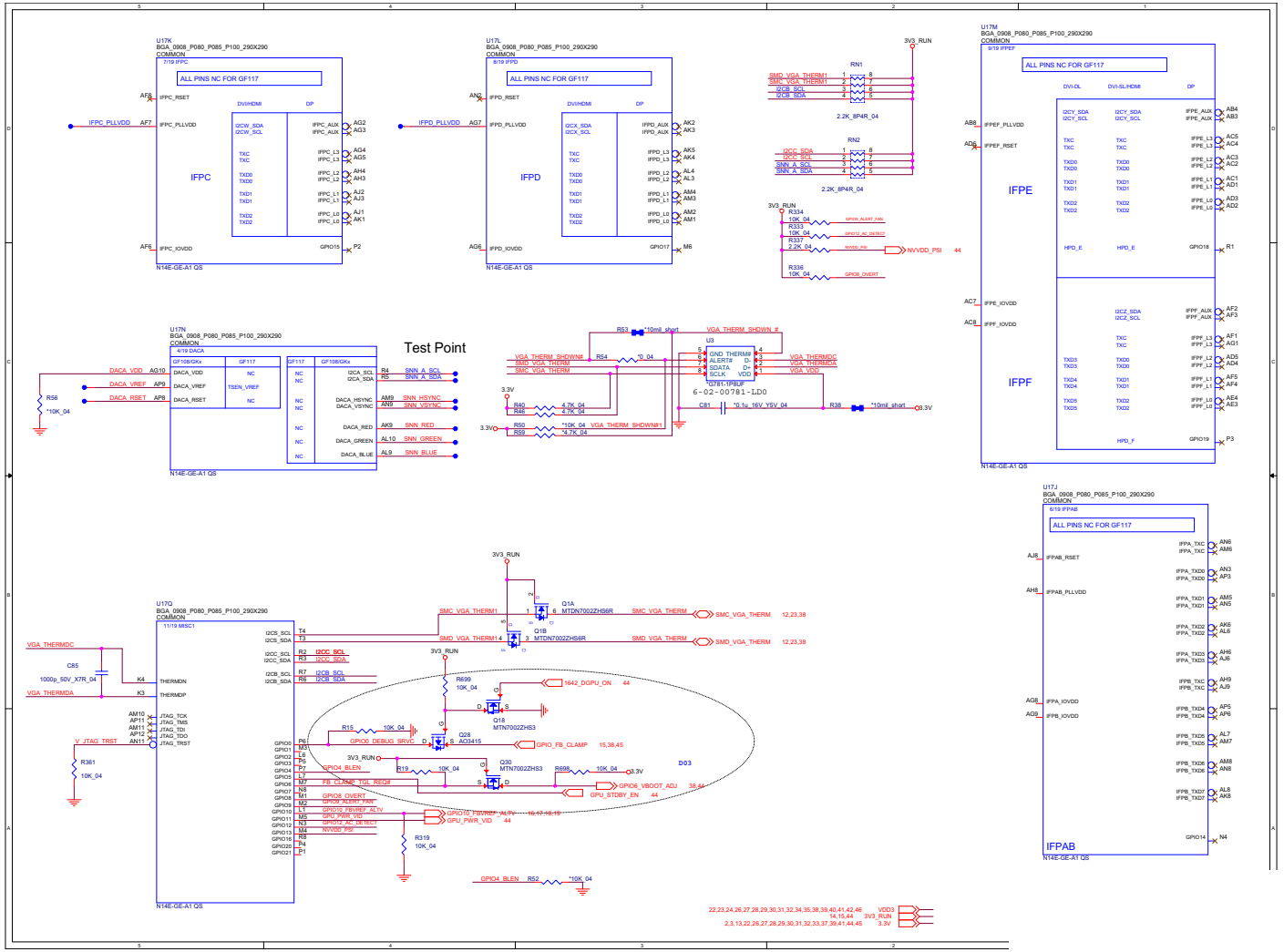
Sheet 18 of 55
VGA Frame Buffer B

VGA Frame Buffer B

Sheet 19 of 55
VGA Frame Buffer B



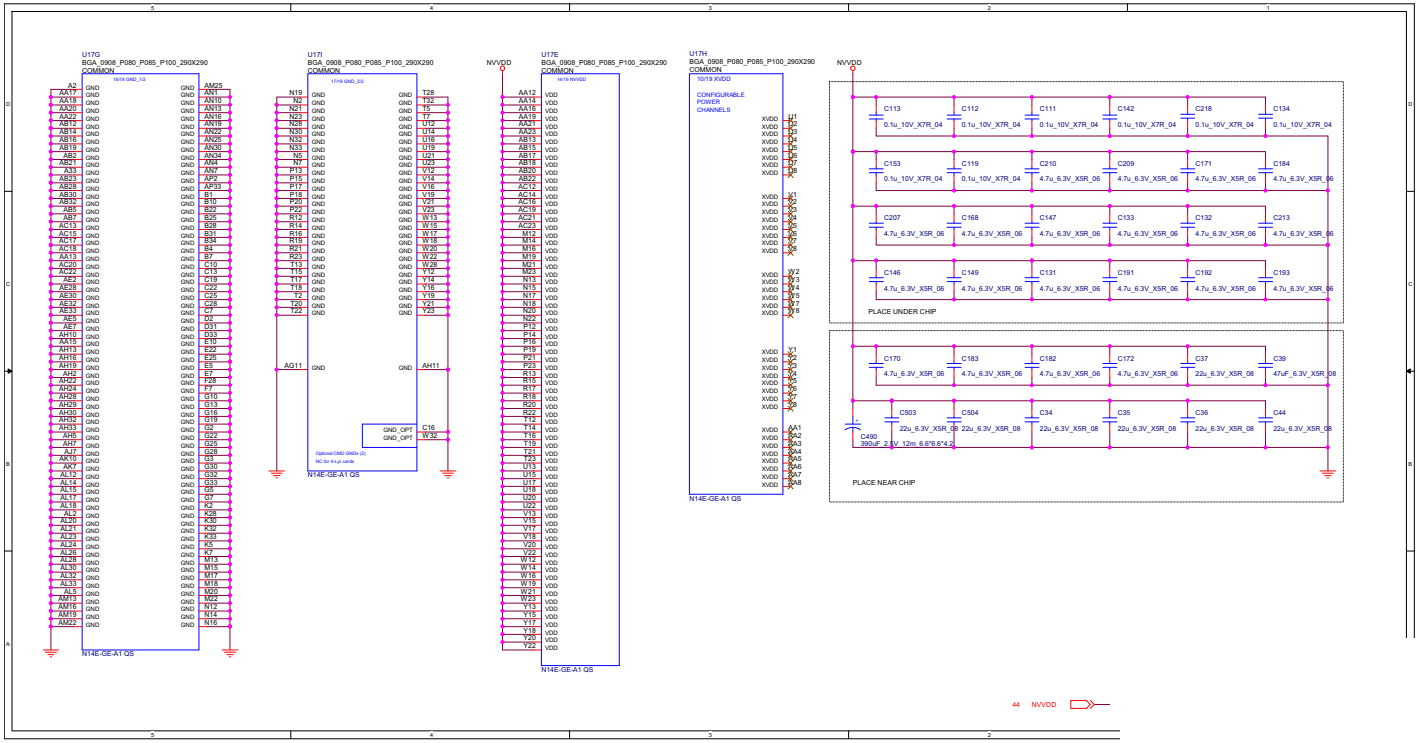
VGA I/O



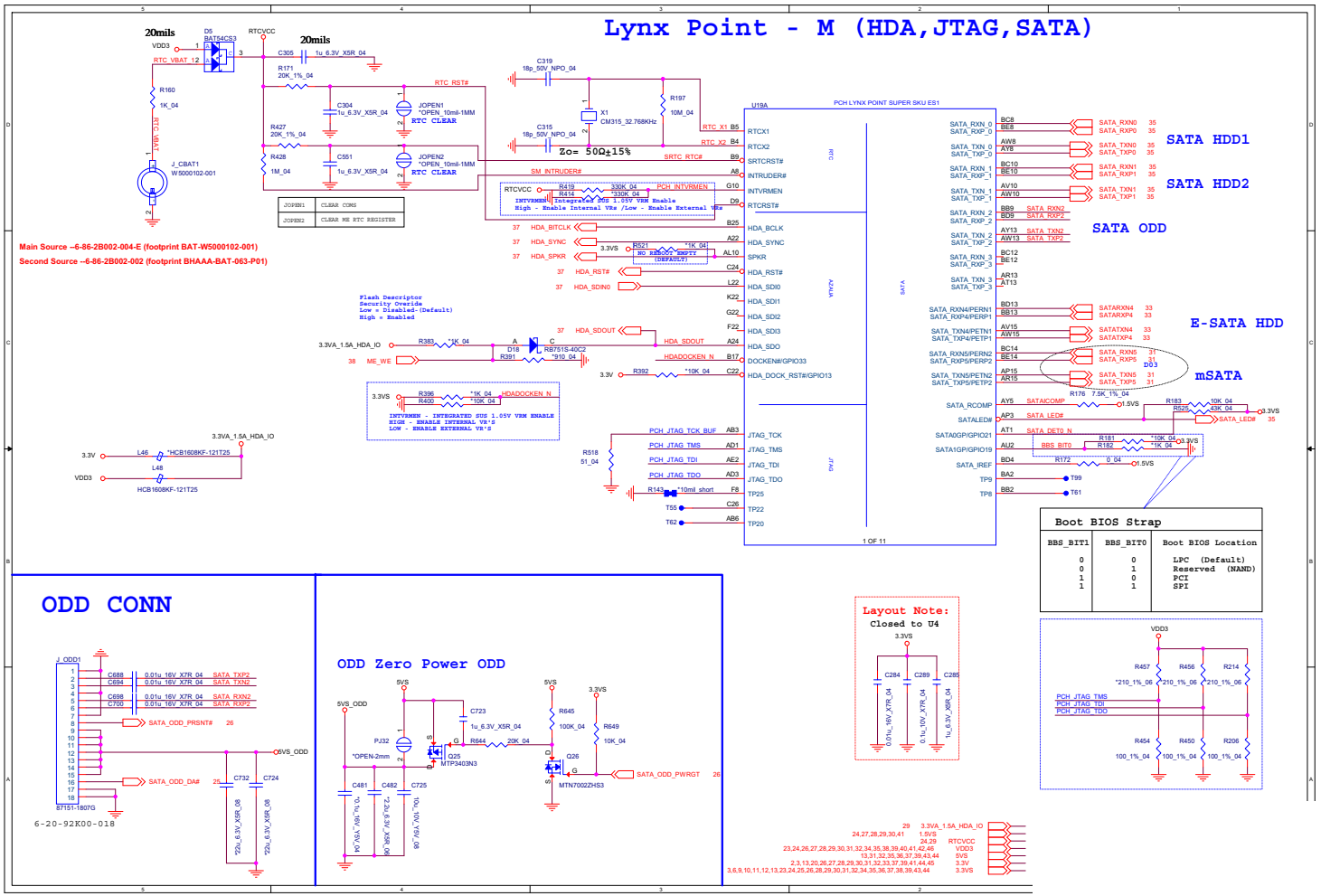
Sheet 20 of 55
VGA I/O

VGA NVDD Decoupling

Sheet 21 of 55
VGA NVDD
Decoupling



Lynx 1/9

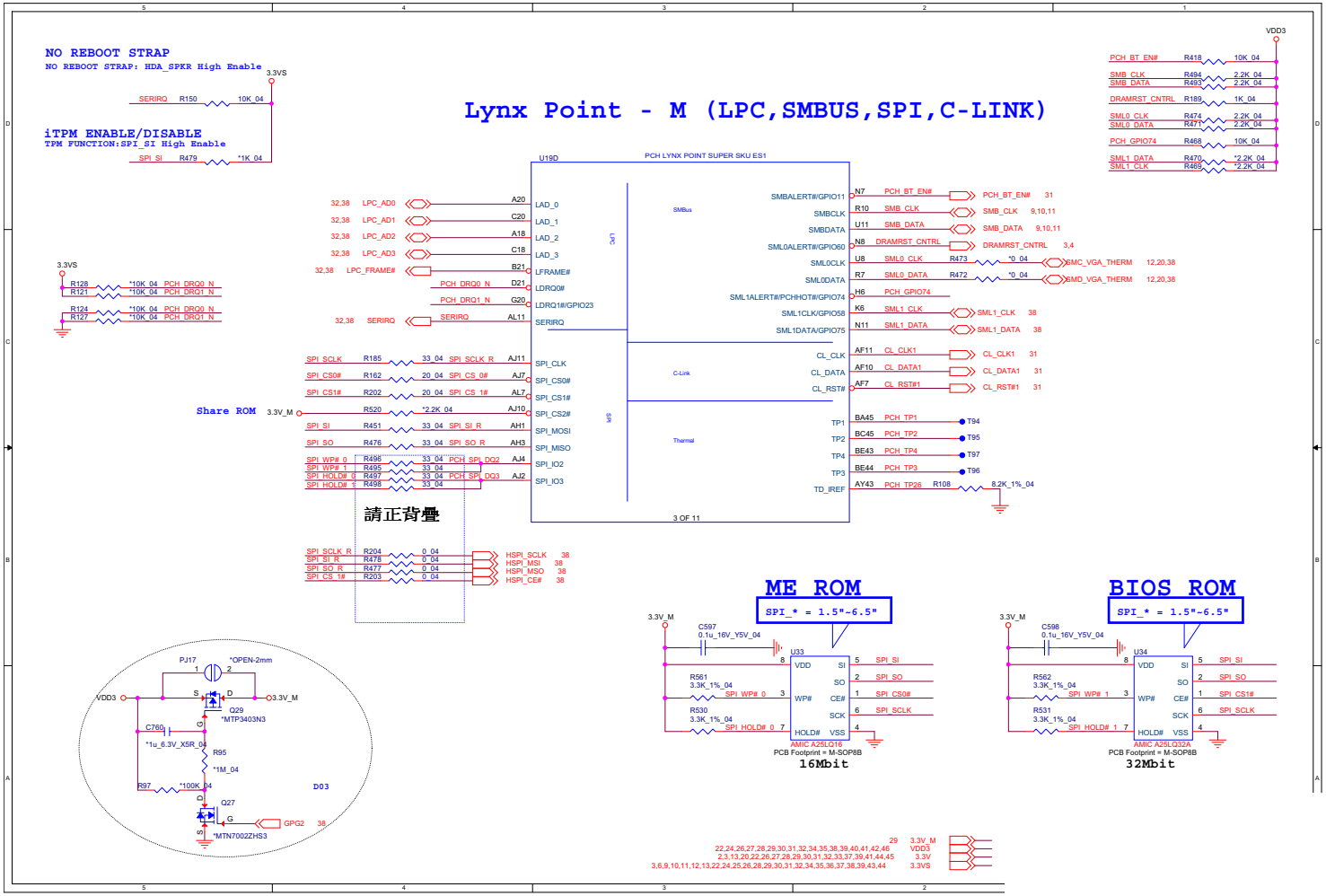


Sheet 22 of 55
Lynx 1/9

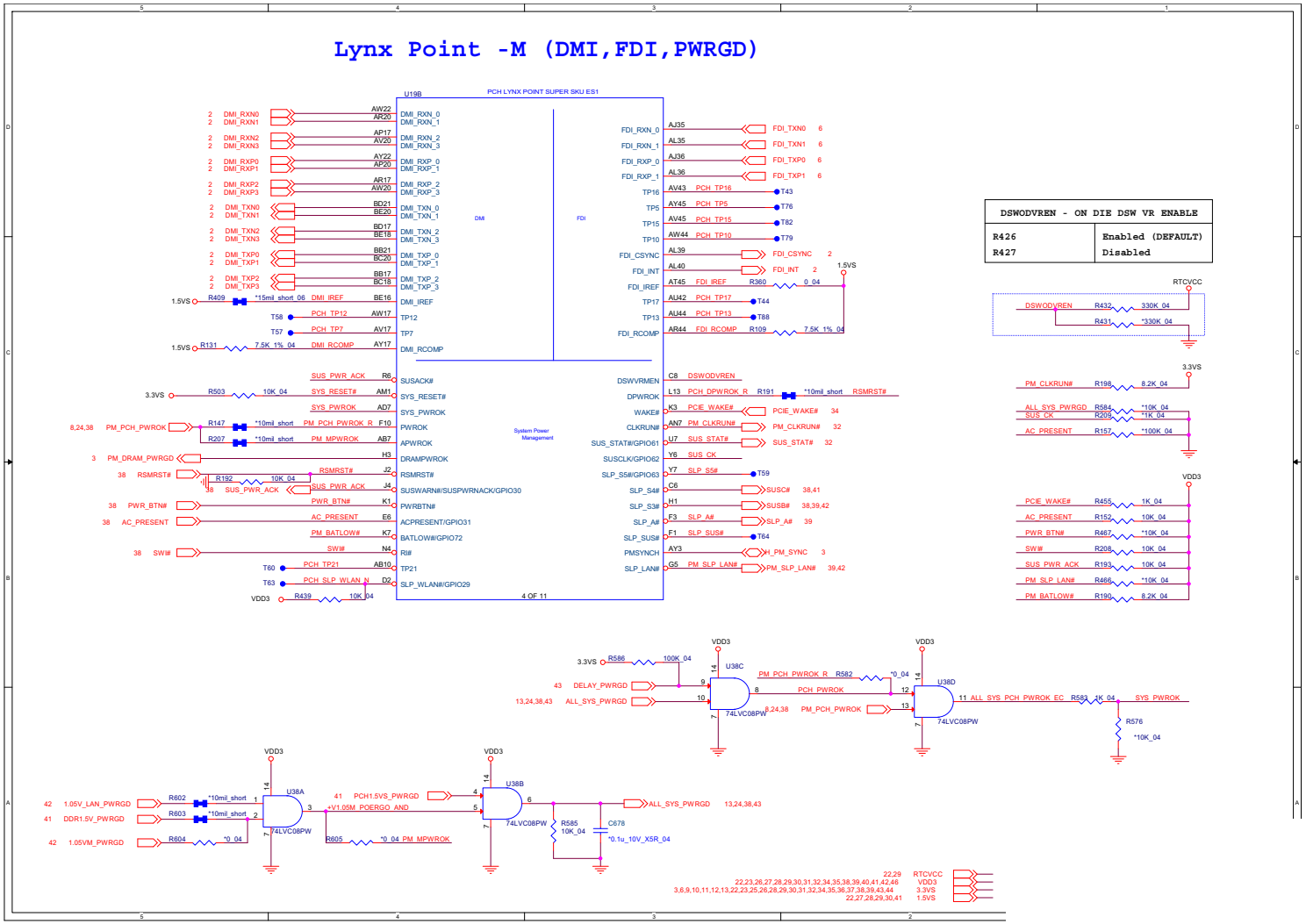
B.Schematic Diagrams

Lynx 2/9

Sheet 23 of 55
Lynx 2/9



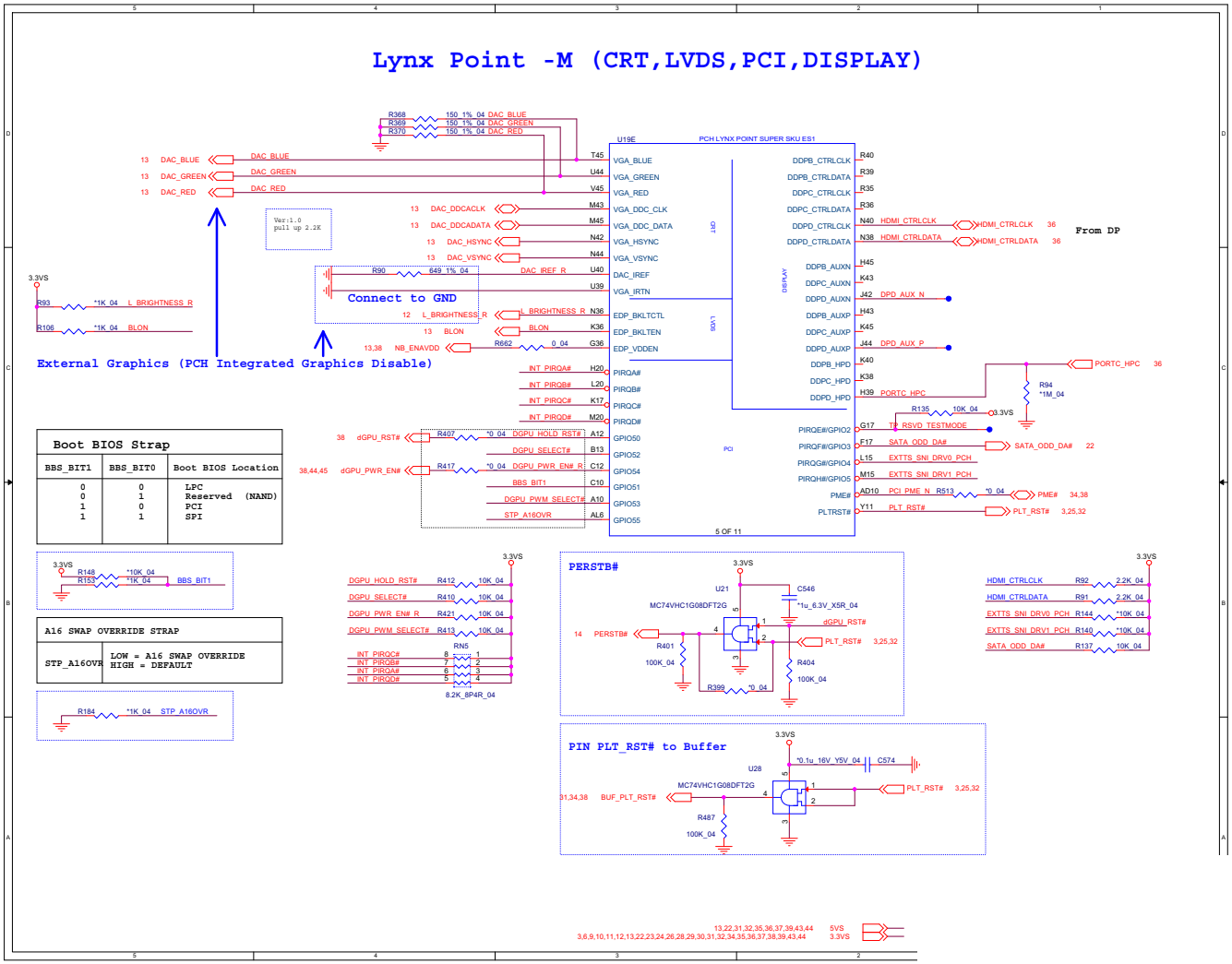
Lynx 3/9



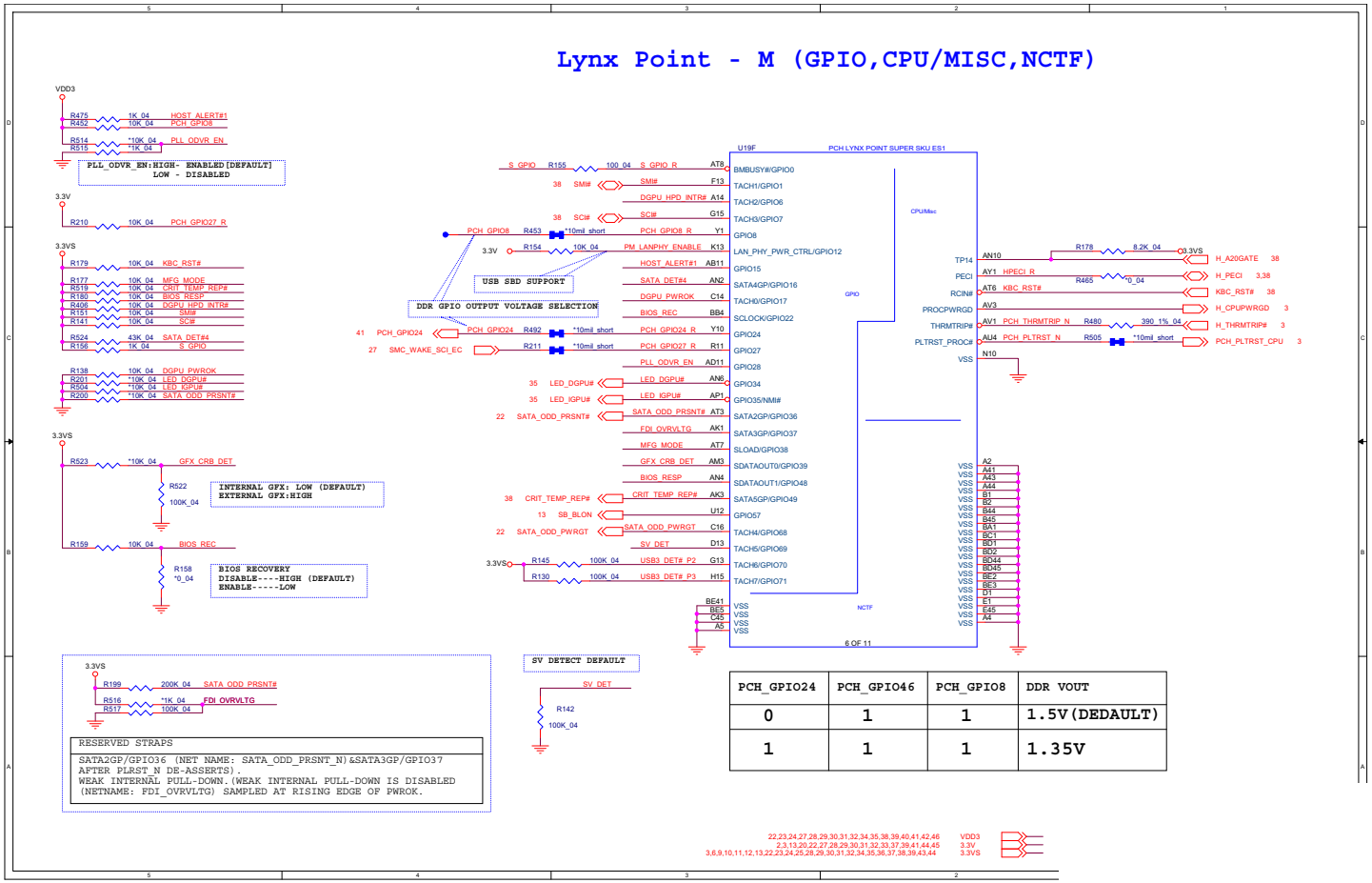
Sheet 24 of 55
Lynx 3/9

Lynx 4/9

Sheet 25 of 55
Lynx 4/9



Lynx 5/9



PCH_GPIO24	PCH_GPIO46	PCH_GPIO8	DDR VOUT
0	1	1	1.5V(DEDAULT)
1	1	1	1.35V

Sheet 26 of 55
Lynx 5/9

Lynx 6/9

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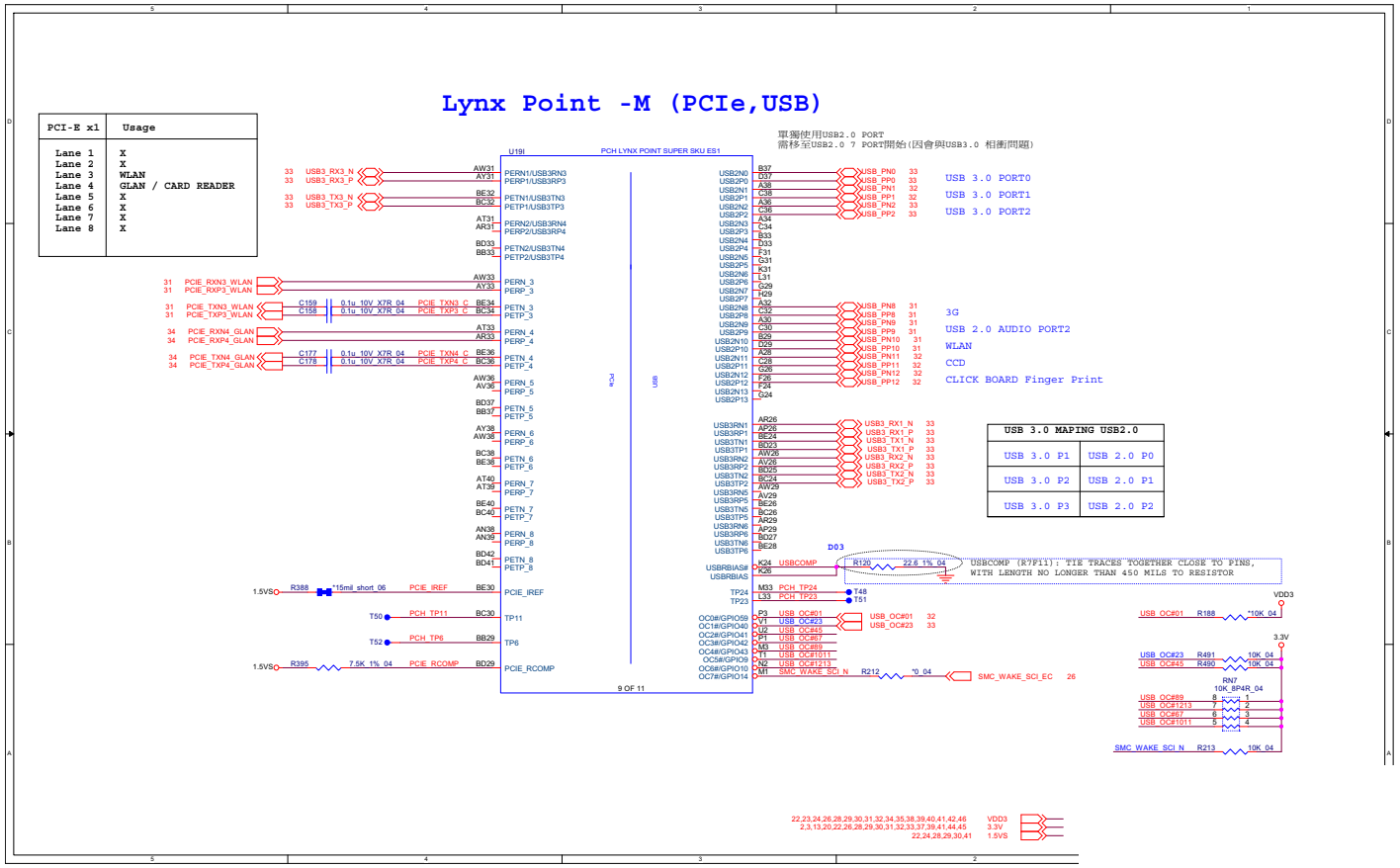
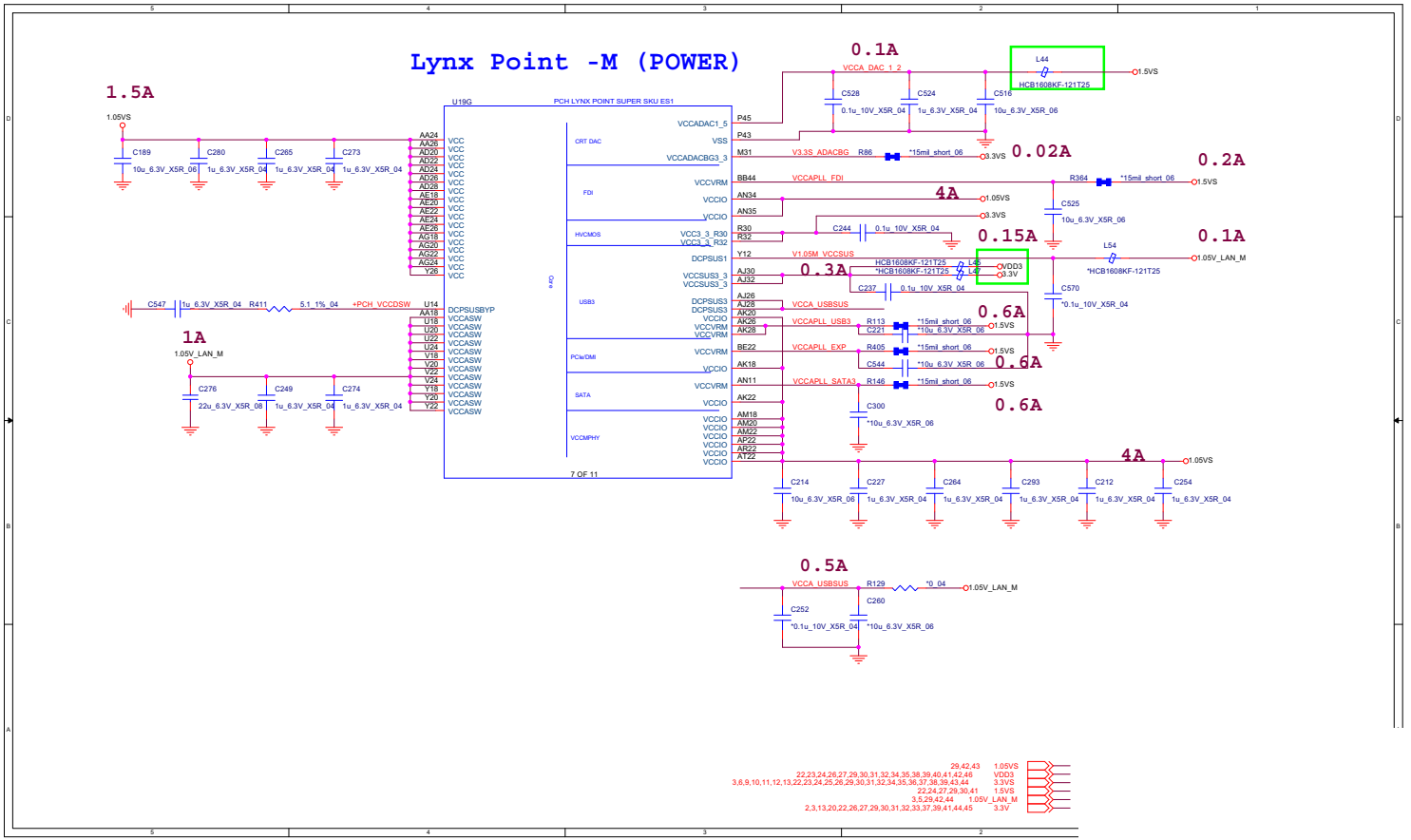
Lynx 6/9


Lynx Point -M (PCIe,USB)
PCI-E x1 | Usage
Lane 1 | X
Lane 2 | X
Lane 3 | WLAN
Lane 4 | GLAN / CARD READER
Lane 5 | X
Lane 6 | X
Lane 7 | X
Lane 8 | X
單獨使用USB2.0 PORT
需移至USB2.0 7 PORT開始(因會與USB3.0 相衝問題)
USB 3.0 PORT0
USB 3.0 PORT1
USB 3.0 PORT2
3G
USB 2.0 AUDIO PORT2
WLAN
CCD
CLICK BOARD Finger Print
USB 3.0 MAPING USB2.0
USB 3.0 P1 | USB 2.0 P0
USB 3.0 P2 | USB 2.0 P1
USB 3.0 P3 | USB 2.0 P2
USBCOMP (R7P11) : TIE TRACES TOGETHER CLOSE TO PINS, WITH LENGTH NO LONGER THAN 450 MILS TO RESISTOR
9 OF 11

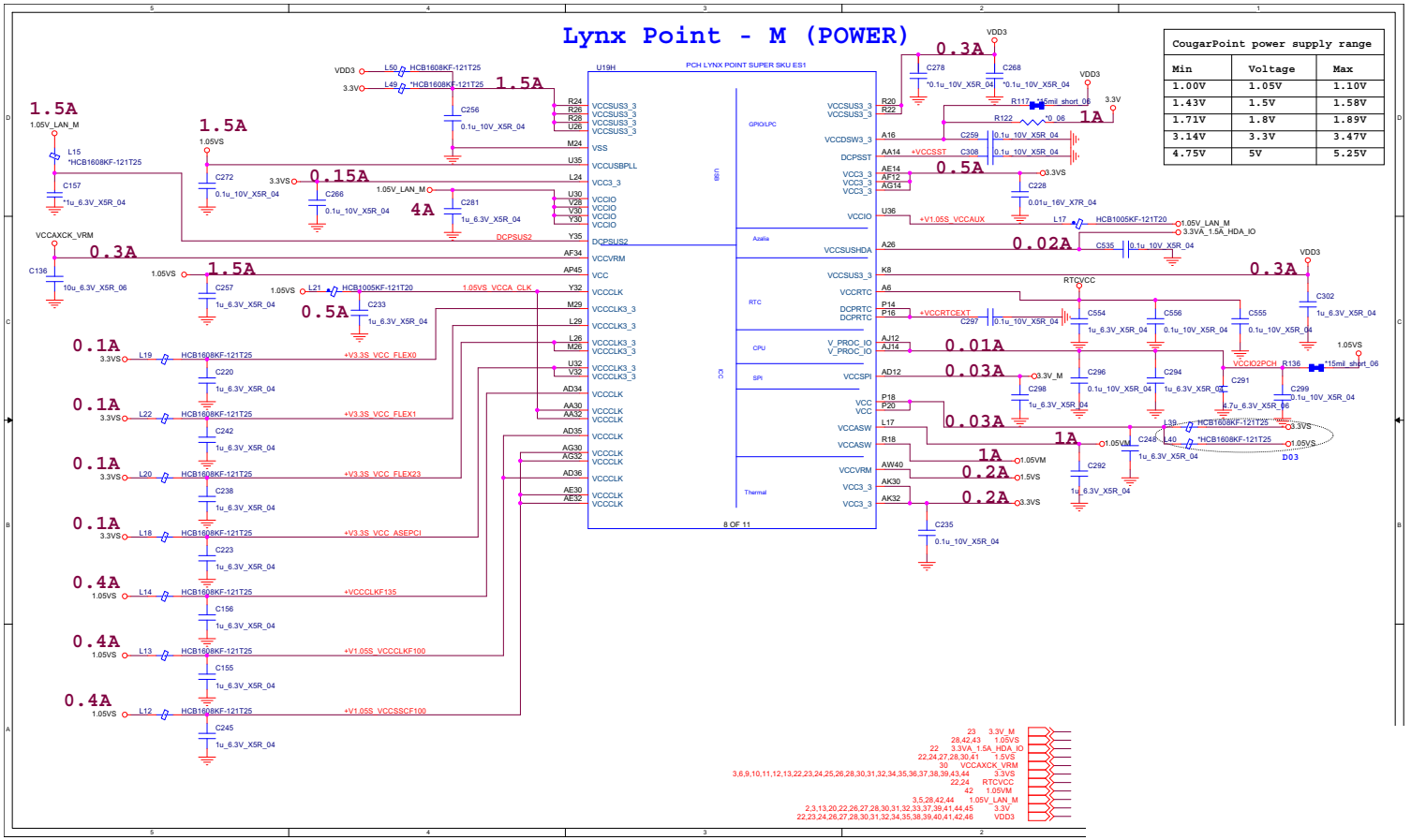
Lynx 7/9



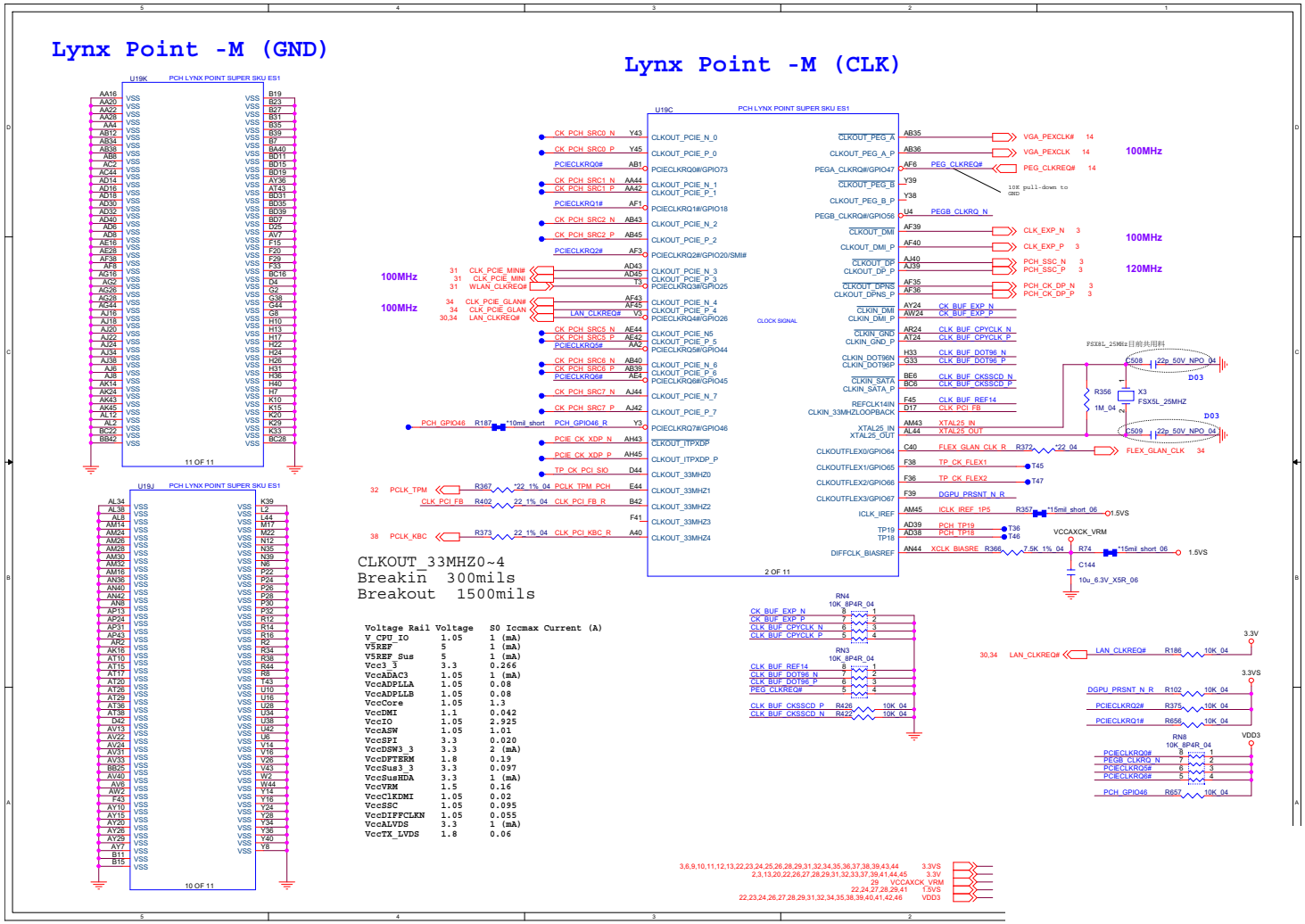
Sheet 28 of 55
Lynx 7/9

Lynx 8/9

Sheet 29 of 55
Lynx 8/9


Lynx Point - M (POWER)
CougarPoint power supply range
Min Voltage Max
1.00V 1.05V 1.10V
1.43V 1.5V 1.58V
1.71V 1.8V 1.89V
3.14V 3.3V 3.47V
4.75V 5V 5.25V
U19H
PCH LYNX POINT SUPER SKU ES1
8 OF 11
VCCSUS3_3
VCCSUSPLL
VCC3_3
VCCIO
DCPSUS2
VCCVRM
VCC
VCCCLK
VCCCLK3_3
VCCCLK3_4
VCCCLK3_5
VCCCLK
VCCCLK
VCCCLK

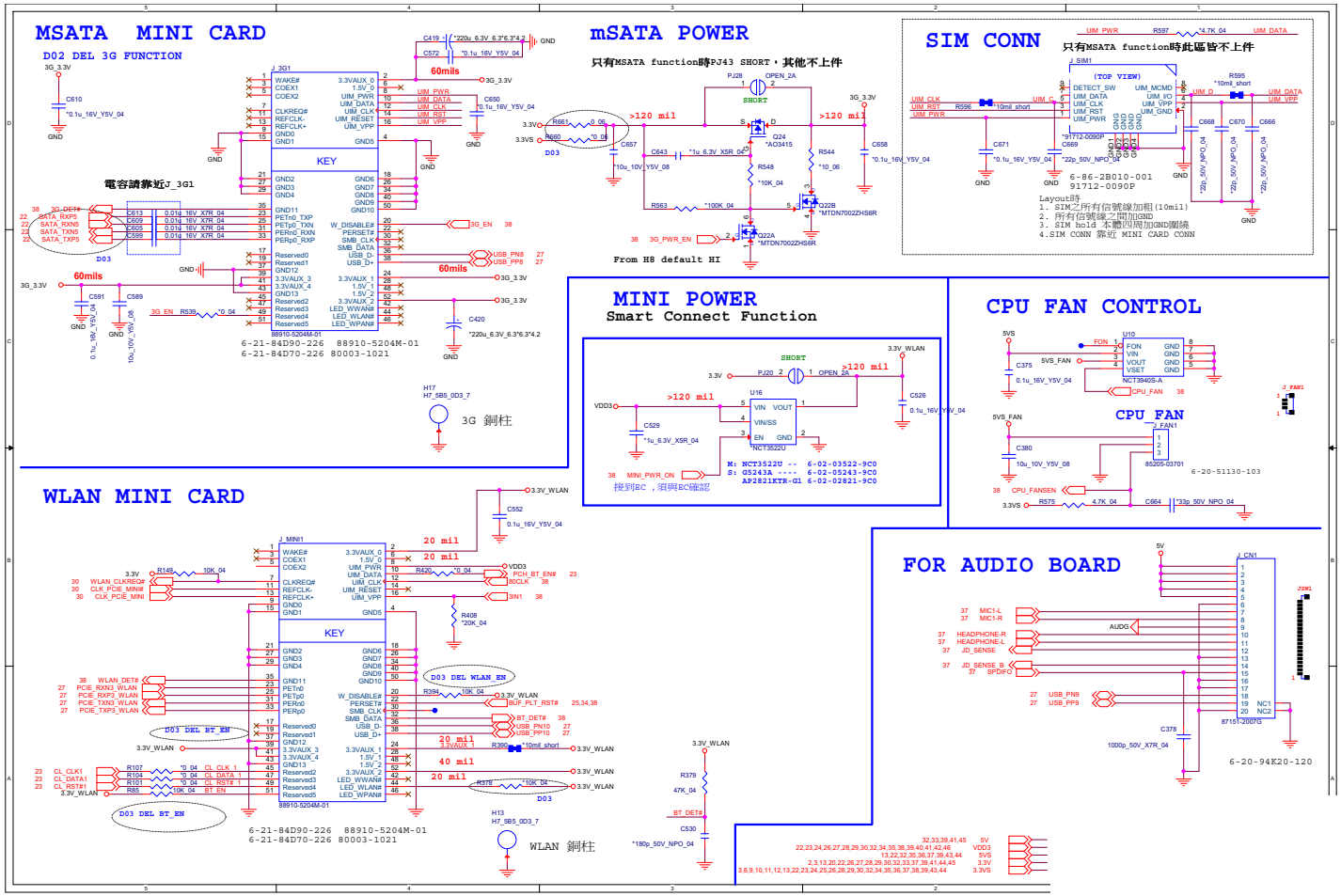
Lynx 9/9



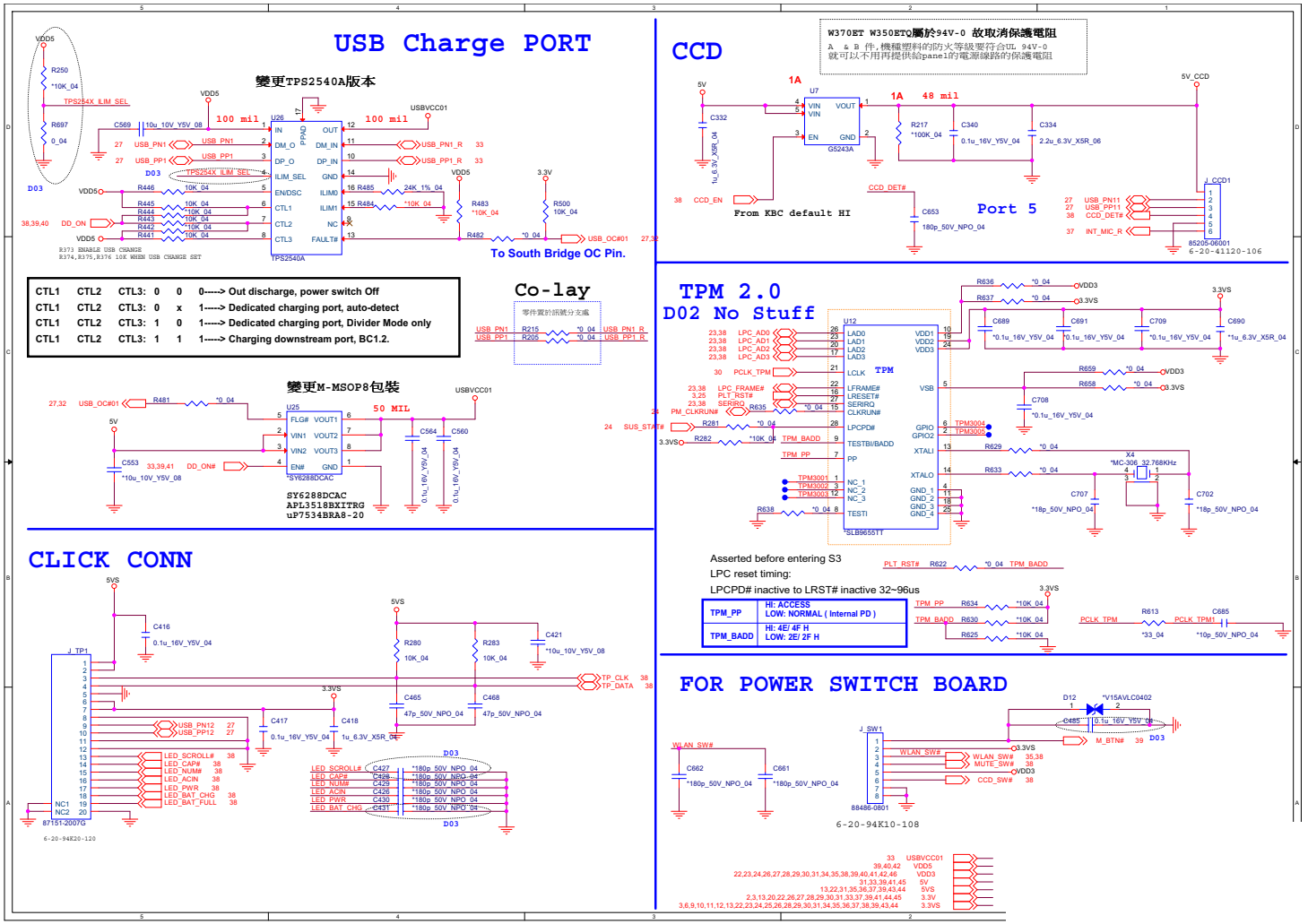
Sheet 30 of 55
Lynx 9/9

Mini PCIE, Fan, Audio Con

Sheet 31 of 55
Mini PCIE, FAN, Audio Con



USB Charge, CCD, TPM, Multi-Con

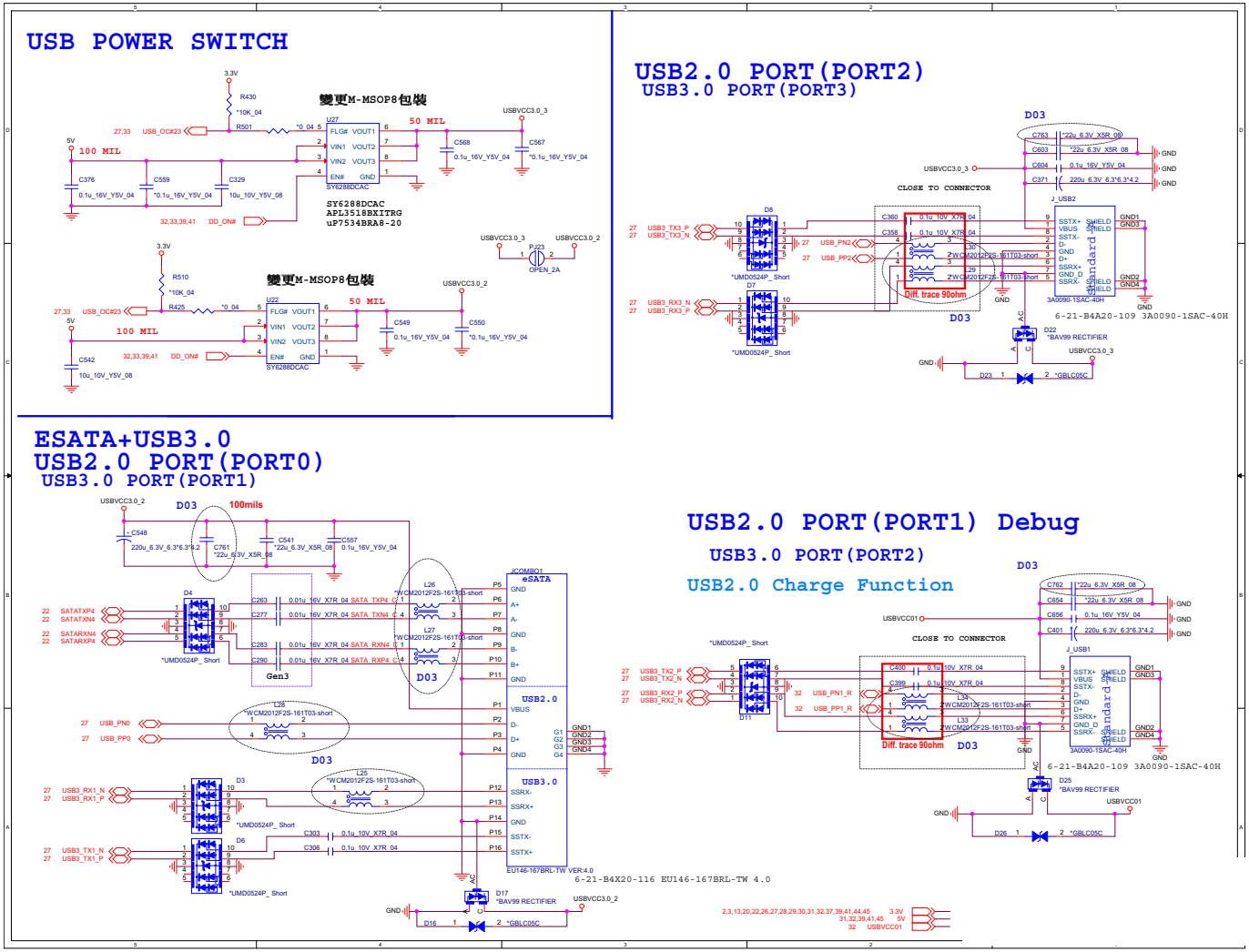


Sheet 32 of 55
USB Charge, CCD, TPM, Multi-Con

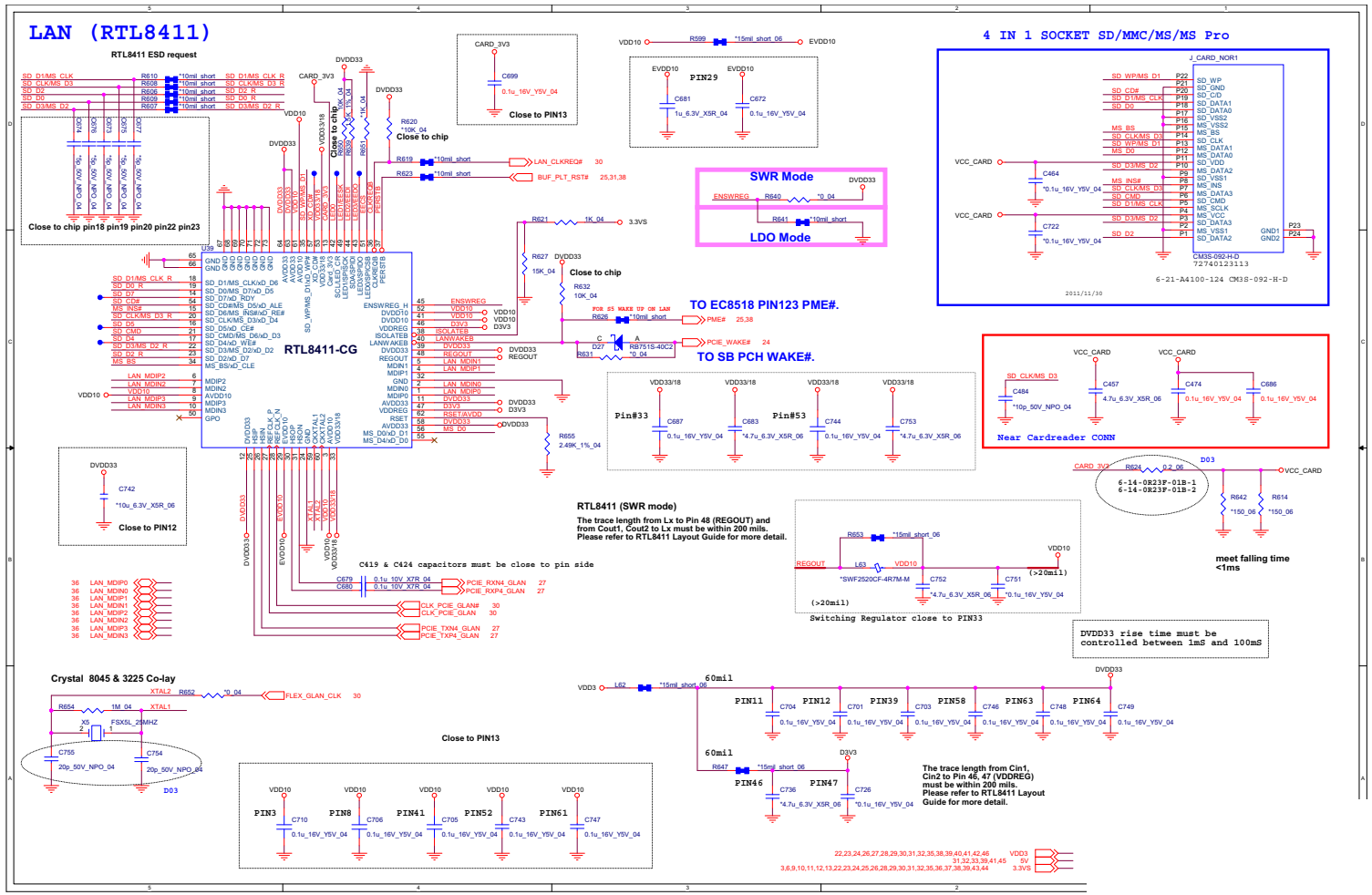
B.Schematic Diagrams

ESATA/USB3.0 Connector

Sheet 33 of 55
ESATA/USB3.0
Connectior



Card Reader / LAN RTL8411


LAN (RTL8411)
RTL8411 ESD request
Close to chip pin18 pin19 pin20 pin22 pin23
RTL8411-CG
4 IN 1 SOCKET SD/MMC/MS/MS Pro
SWR Mode
LDO Mode
TO EC8518 PIN123 PME#.
TO SB PCH WAKE#.
Near Cardreader CONN
RTL8411 (SWR mode)
The trace length from Lx to Pin 48 (REGOUT) and from Cout1, Cout2 to Lx must be within 200 mils. Please refer to RTL8411 Layout Guide for more detail.
C419 & C424 capacitors must be close to pin side
Switching Regulator close to PIN33
meet falling time <1ms
DVDD33 rise time must be controlled between 1mS and 100mS
Crystal 8045 & 3225 Co-lay
Close to PIN13
Close to PIN12
Close to chip
The trace length from Cin1, Cin2 to Pin 46, 47 (VDDREG) must be within 200 mils. Please refer to RTL8411 Layout Guide for more detail.

Sheet 34 of 55
Card Reader / LAN RTL8411

SATA HDD, VLED CON, LID SW

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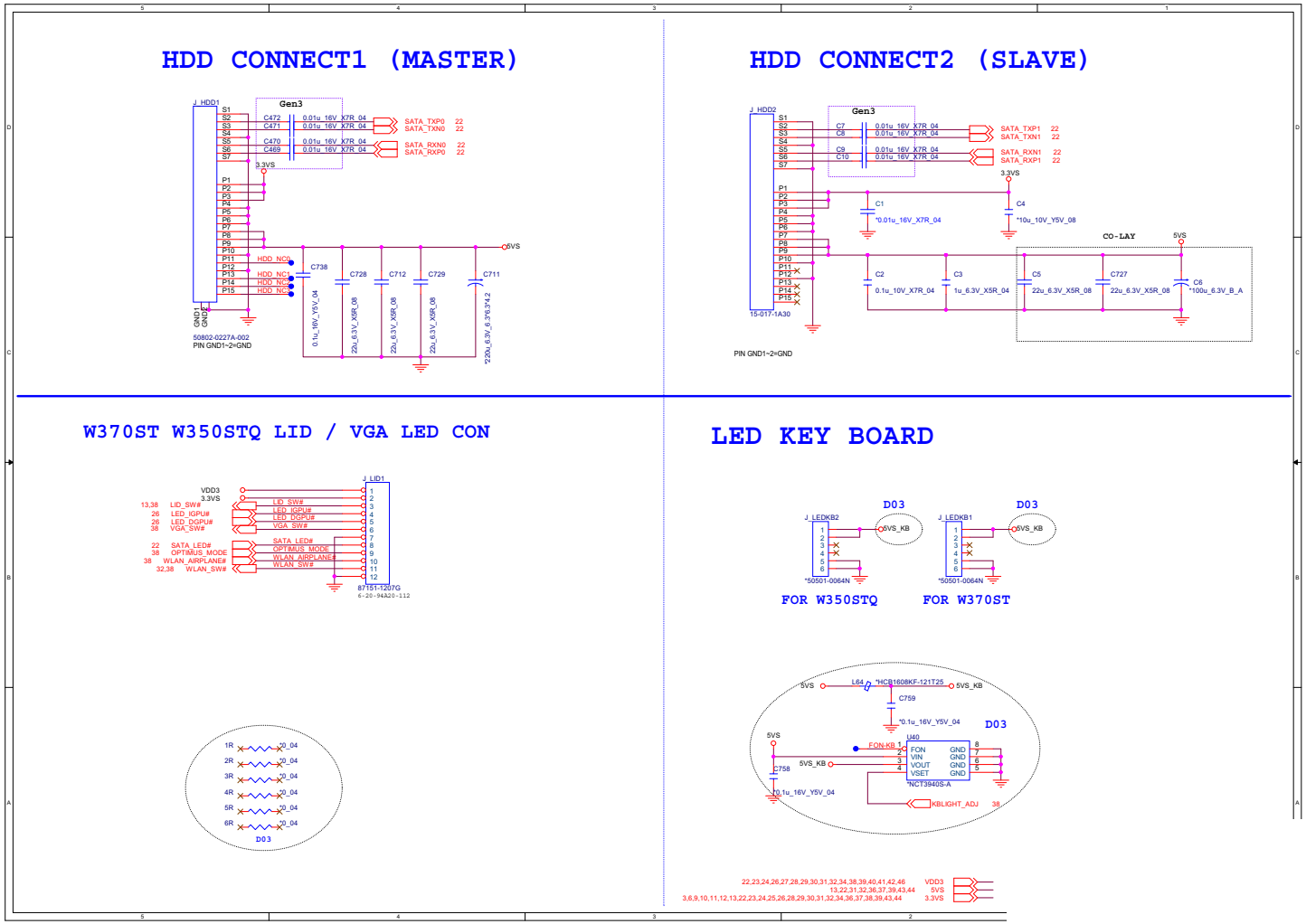
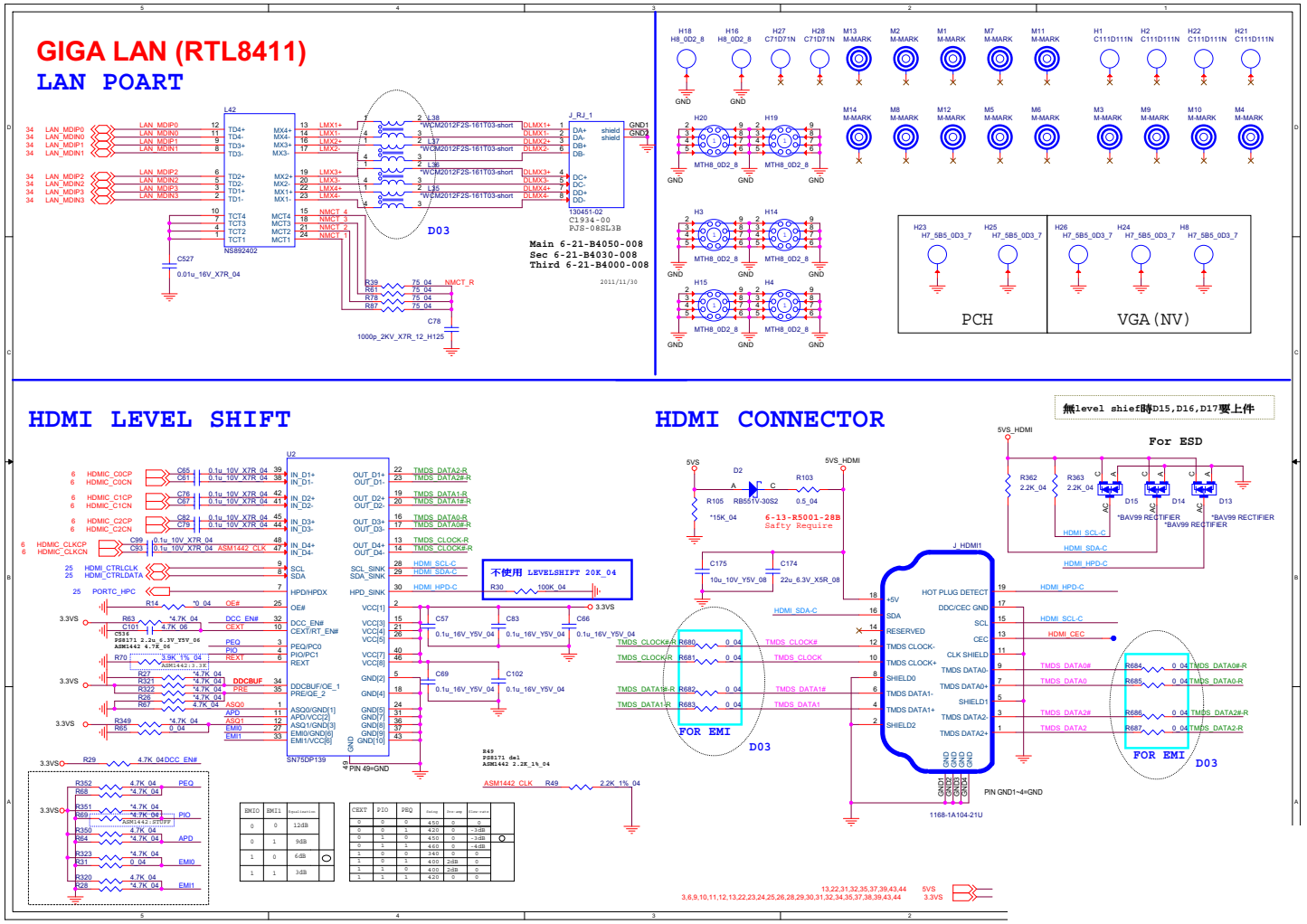
SATA HDD, VLED CON, LI DSW



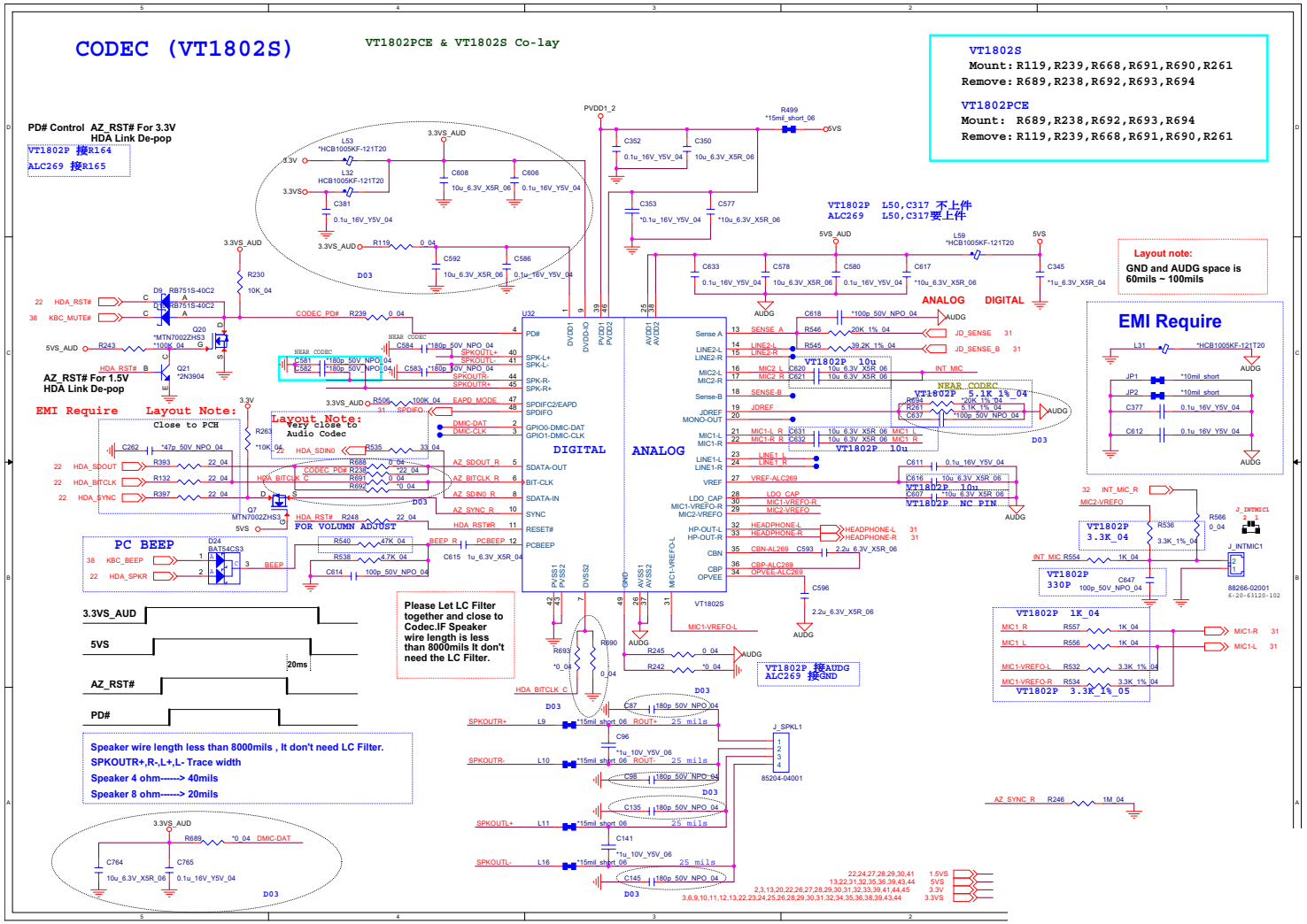
HDMI, RJ45



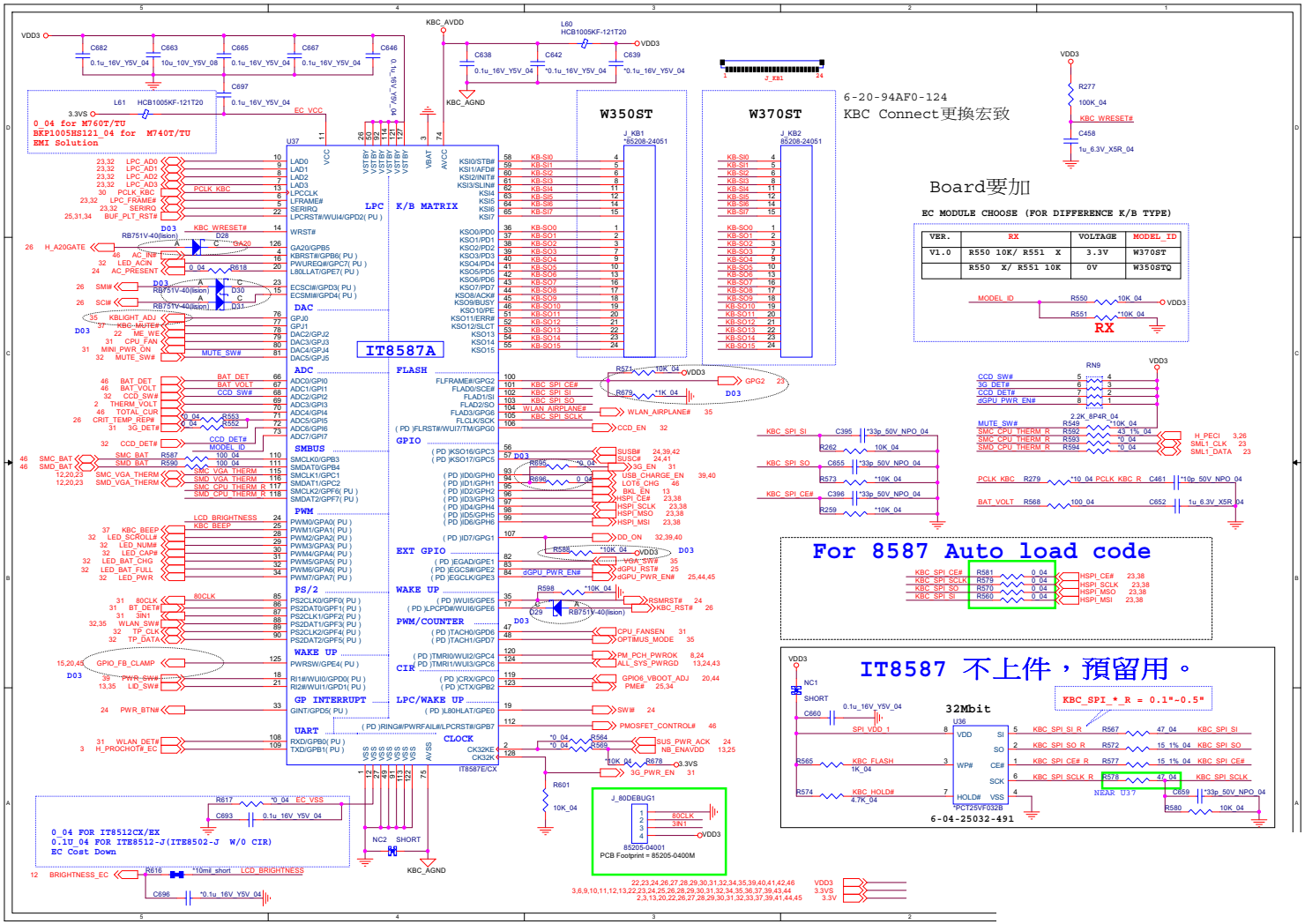
Sheet 36 of 55
HDMI, RJ45

Audio Codec VT1802S

Sheet 37 of 55
Audio Codec
VT1802S



KBC ITE IT8587



Sheet 38 of 55
KBC ITE IT8587

5V, 5VS, 3.3V, 3VS, 3.3VM

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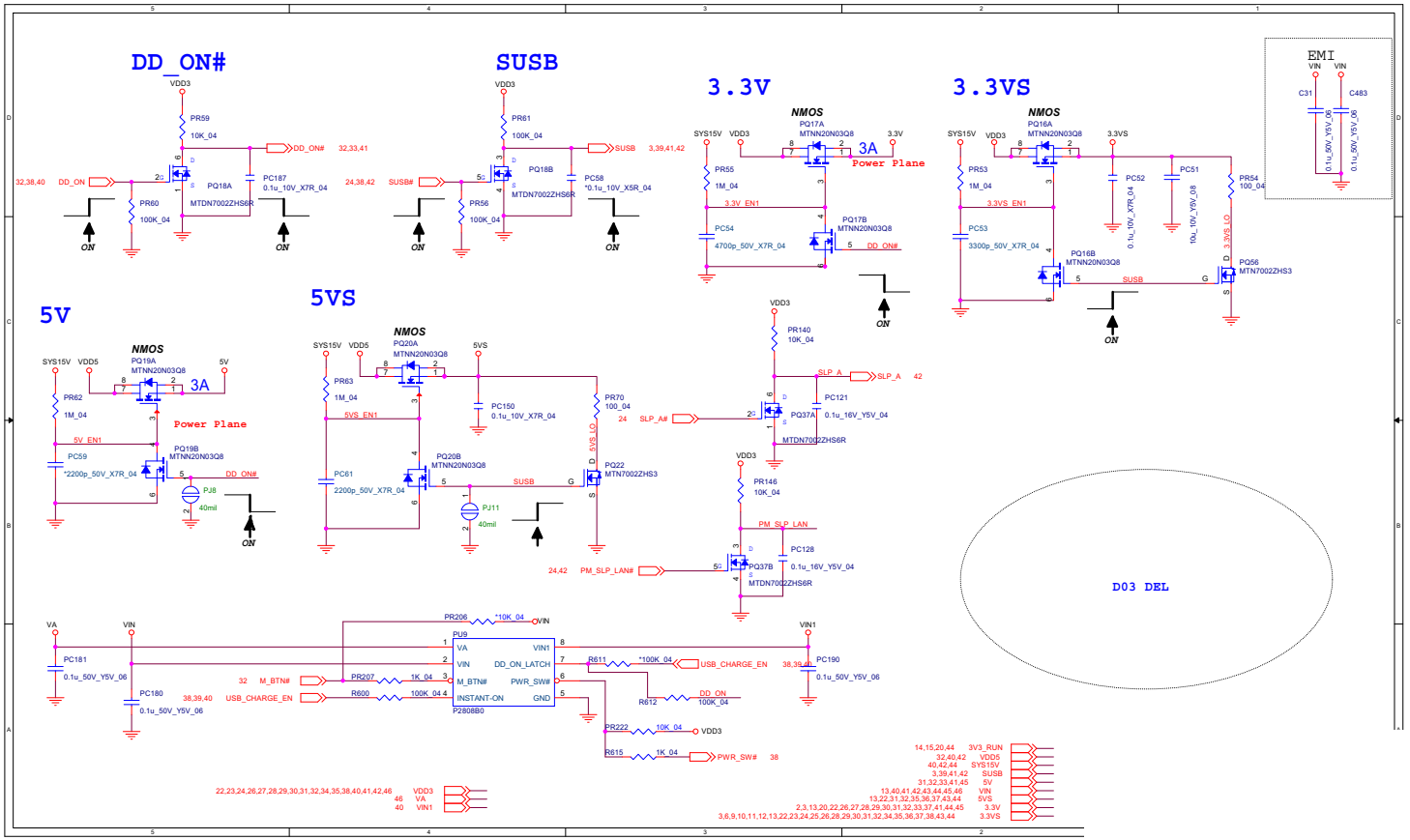
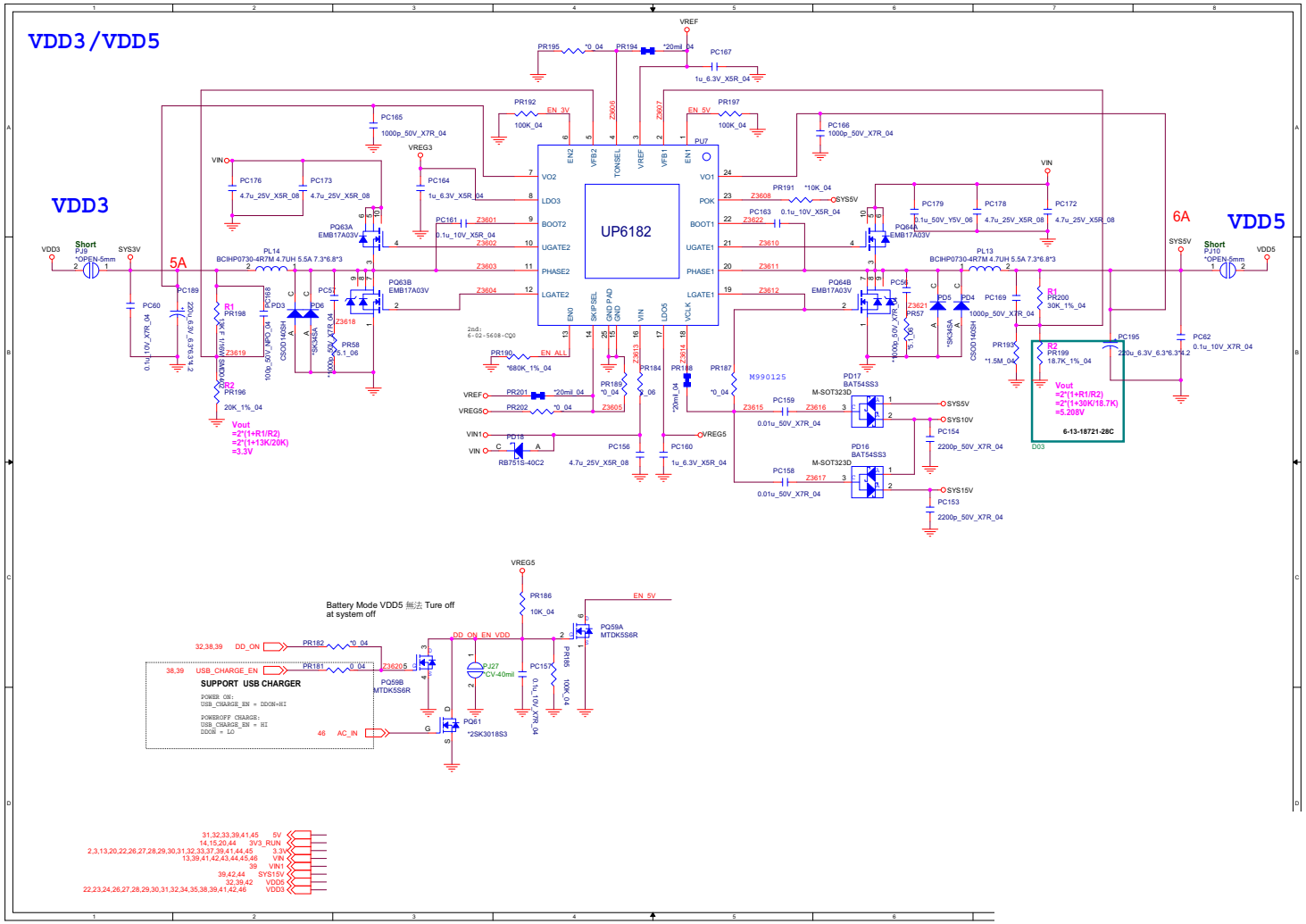
5V, 5VS, 3.3V, 3VS, 3.3VM



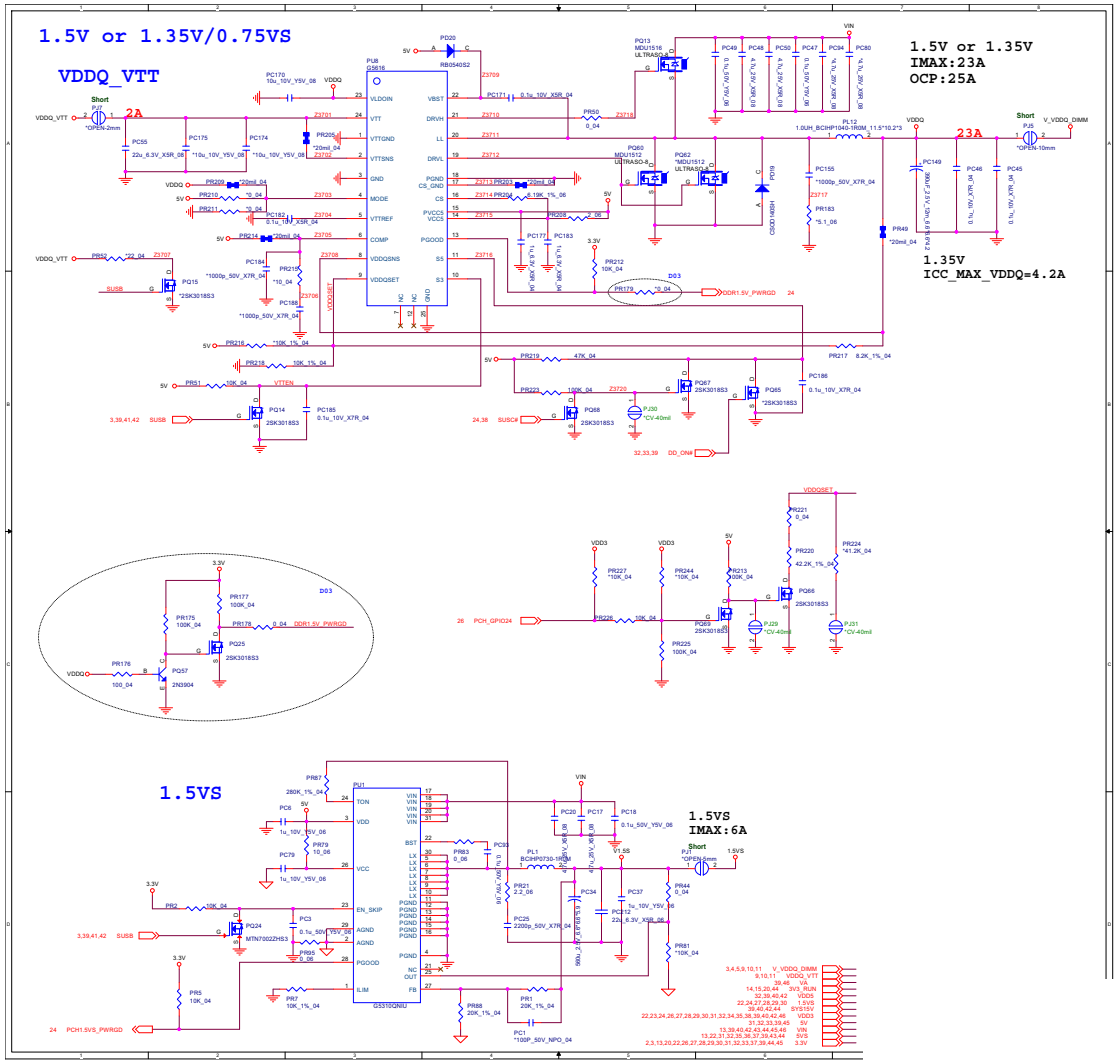
VDD3, VDD5



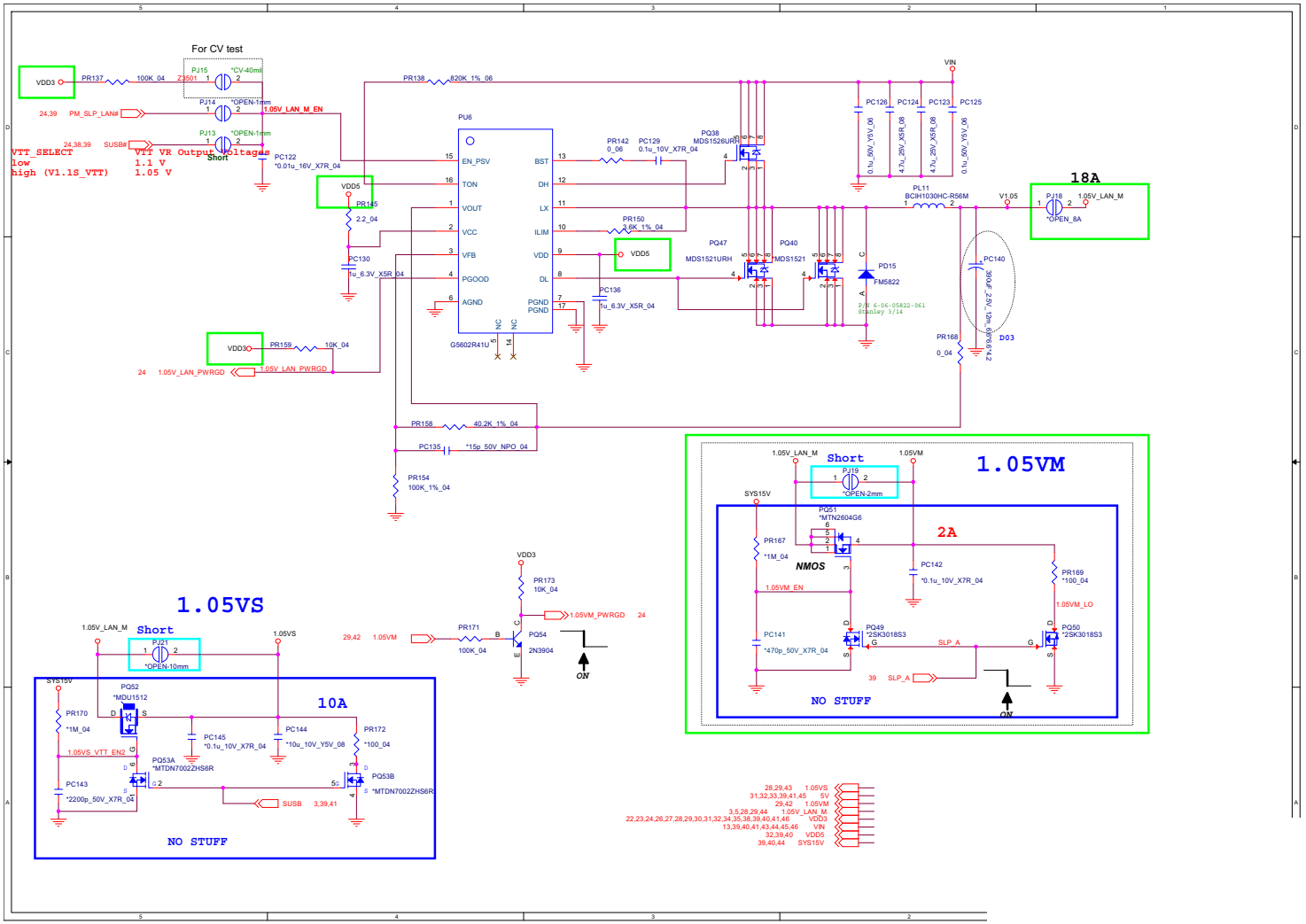
Sheet 40 of 55
VDD3, VDD5

1.5V or 1.35V / 0.75VS, 1.5VS

Sheet 41 of 55
1.5V or 1.35V /
0.75VS, 1.5VS



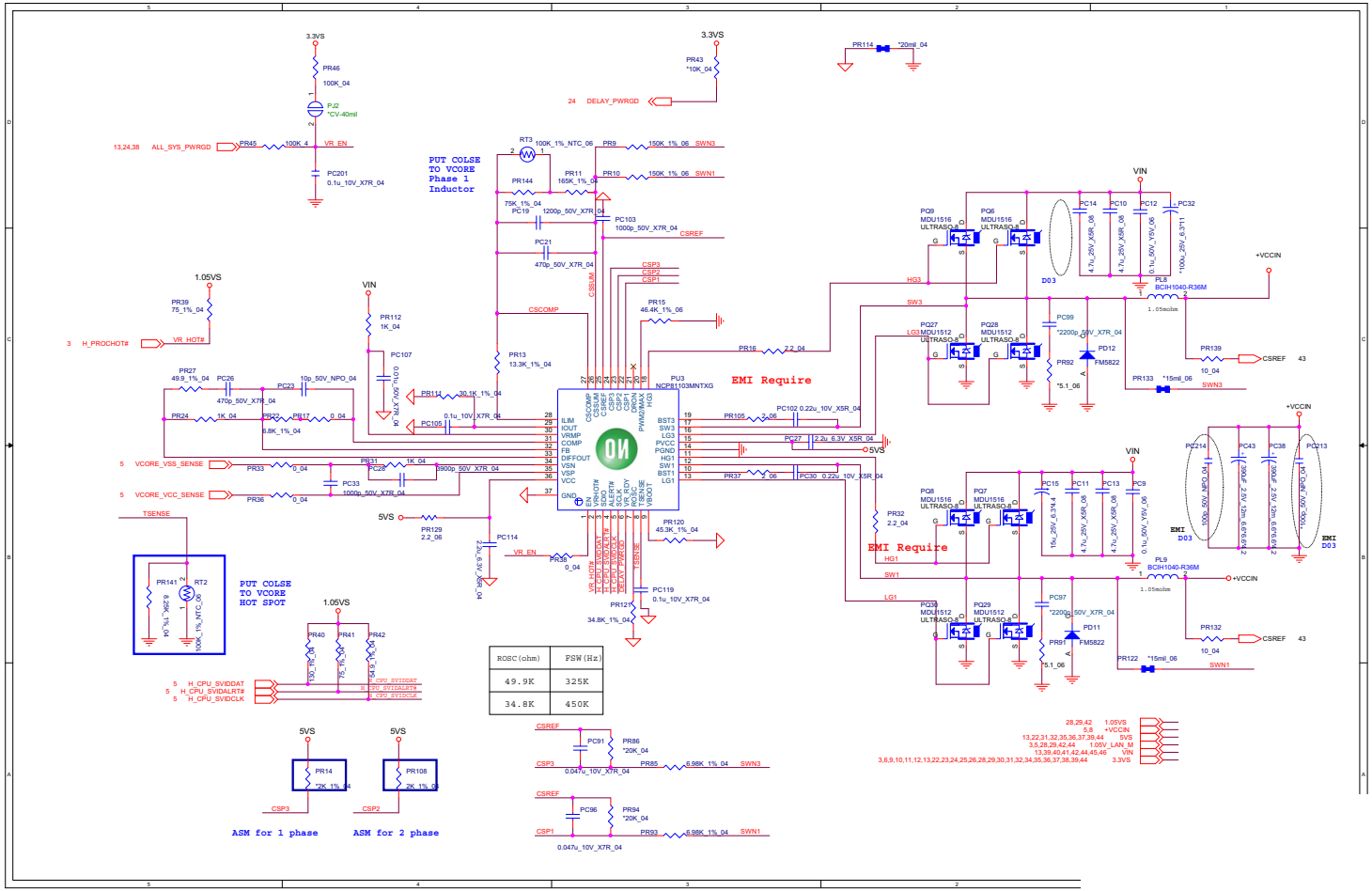
1.05VS, 1.05V_M, 1.05V_LAN_M



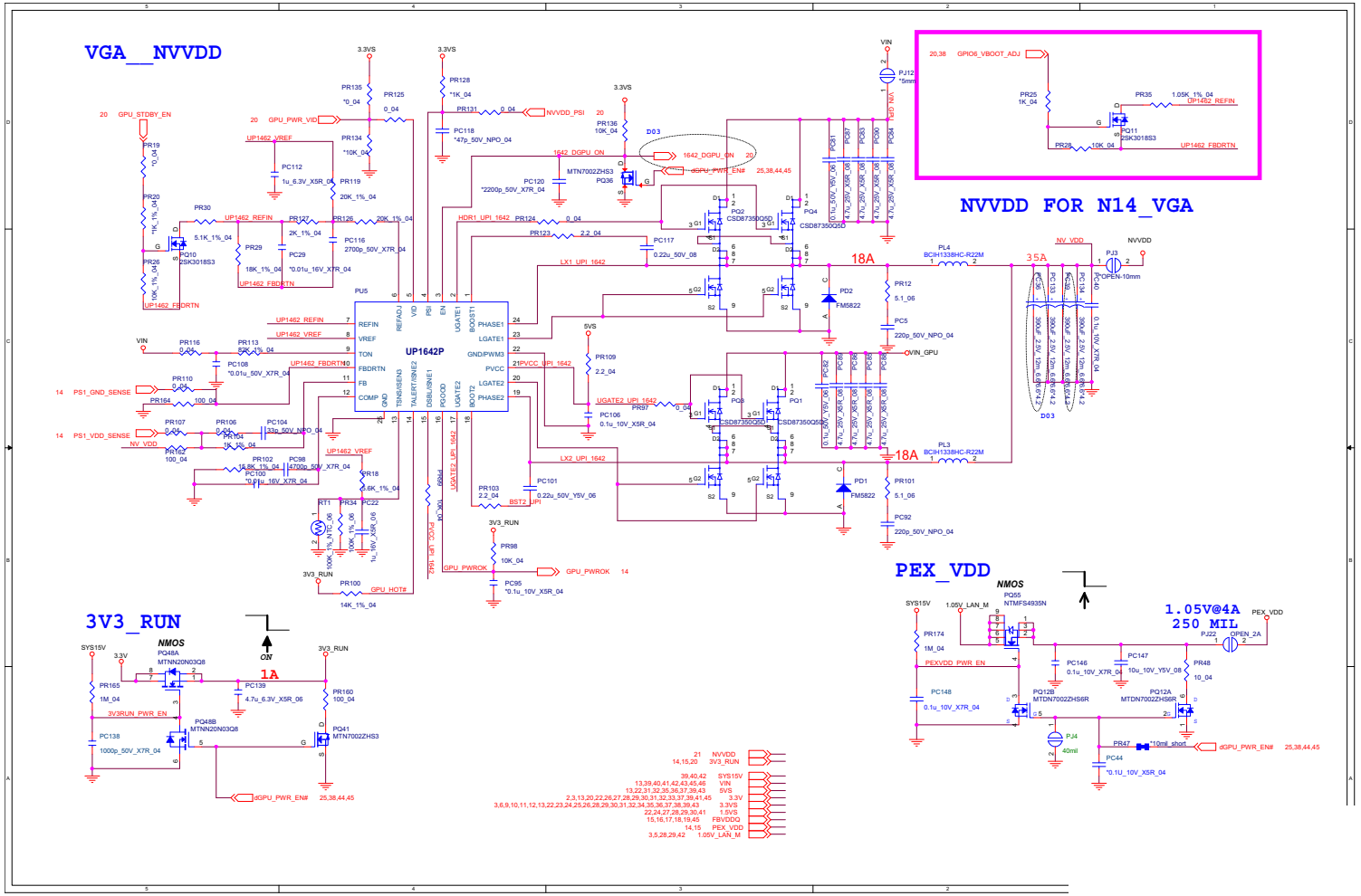
Sheet 42 of 55
1.05VS,1.05V_M,
1.05V_LAN_M

Power V-Core

Sheet 43 of 55
Power V-Core



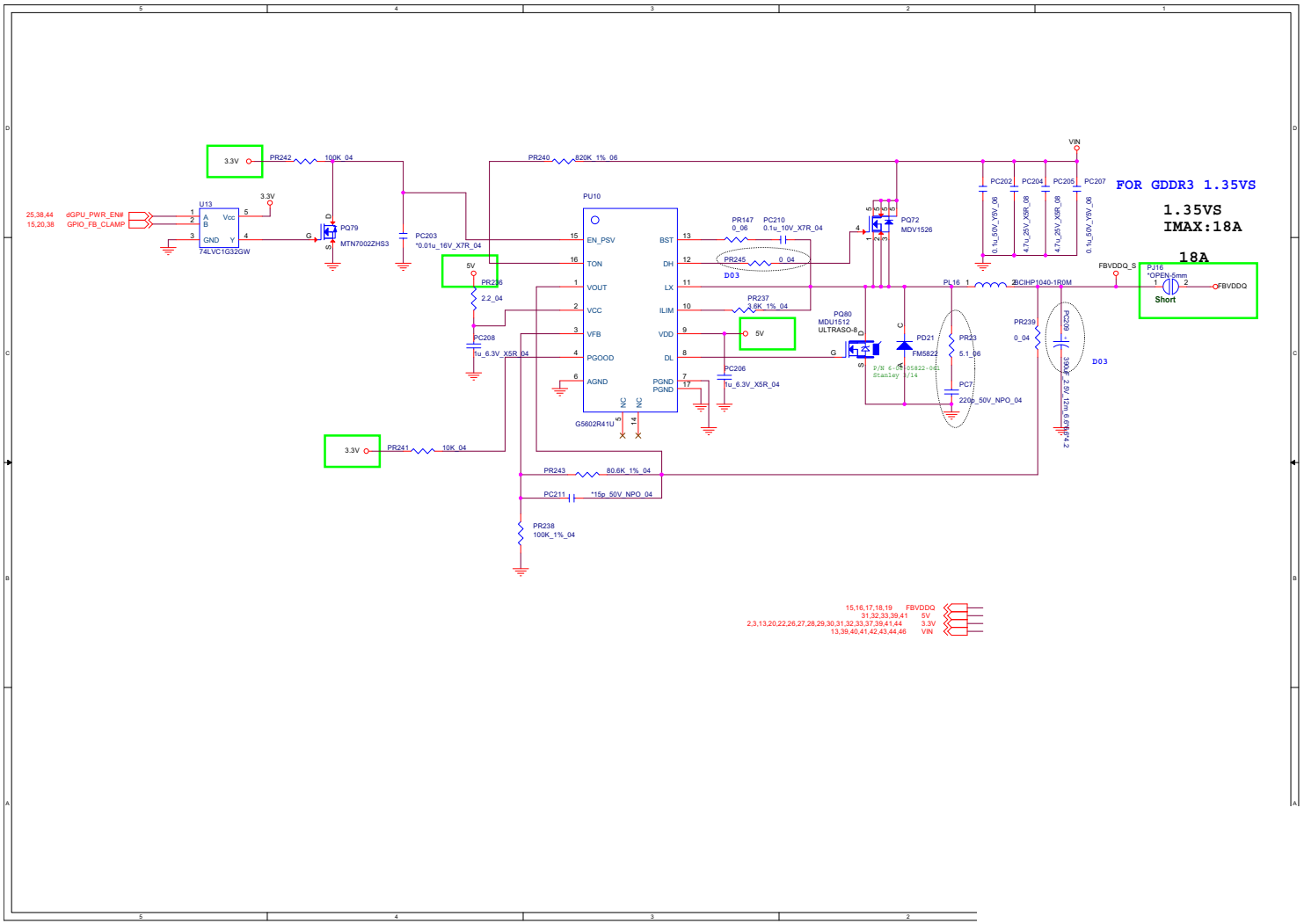
VGA NVVDD, PEX_VDD



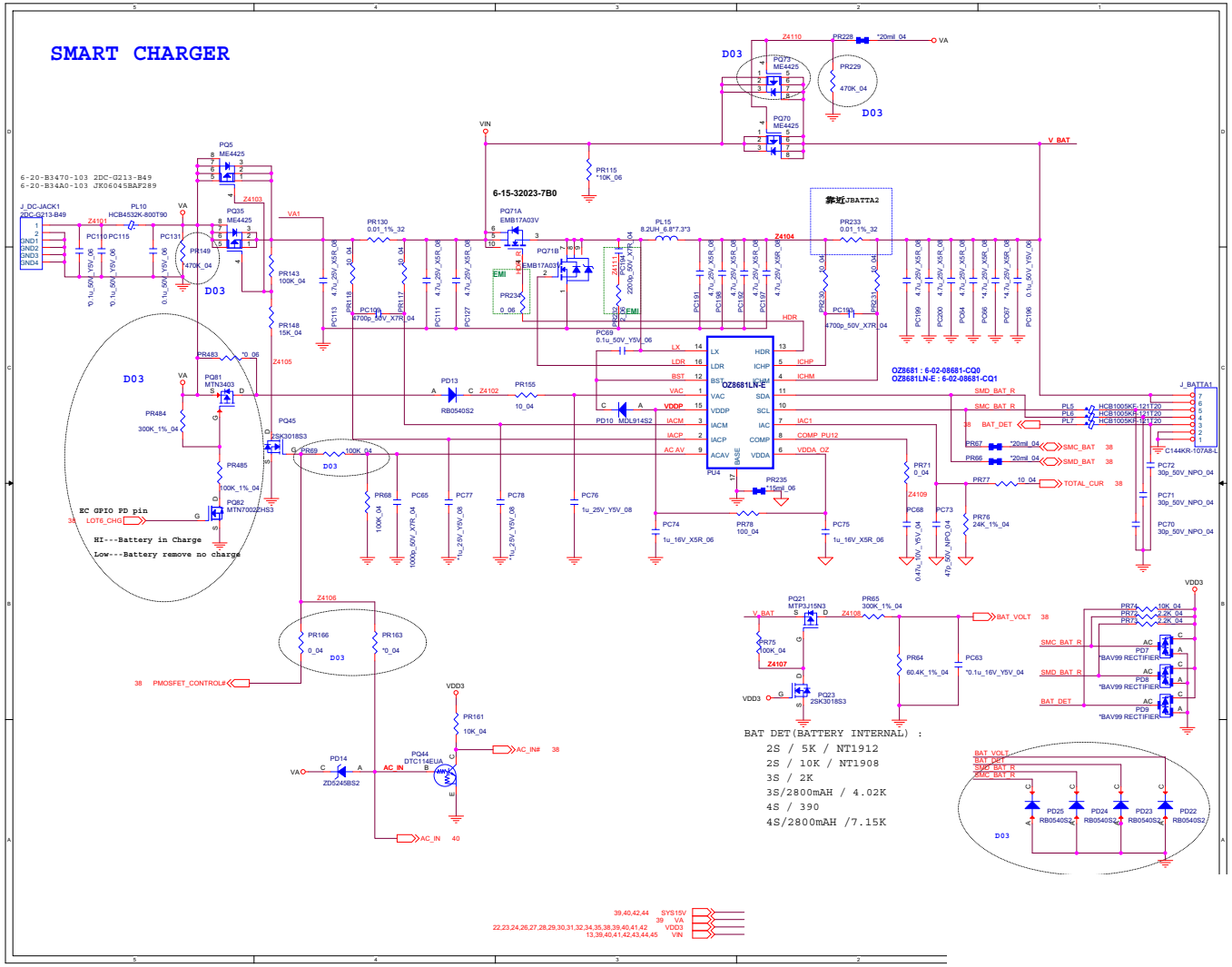
Sheet 44 of 55
VGA NVVDD,
PEX_VDD

FBVDDQ

Sheet 45 of 55
FBVDDQ



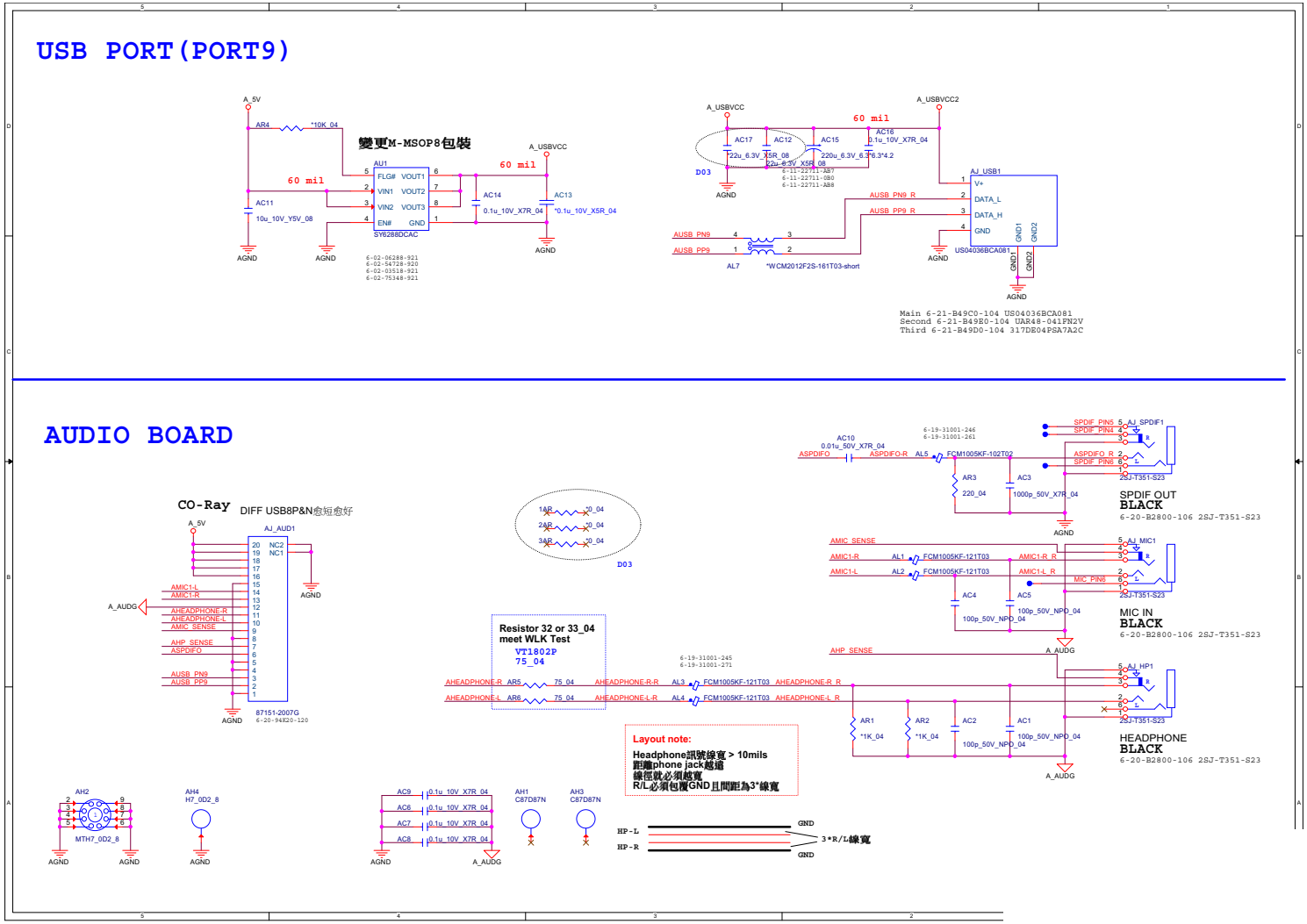
AC-In, Charger



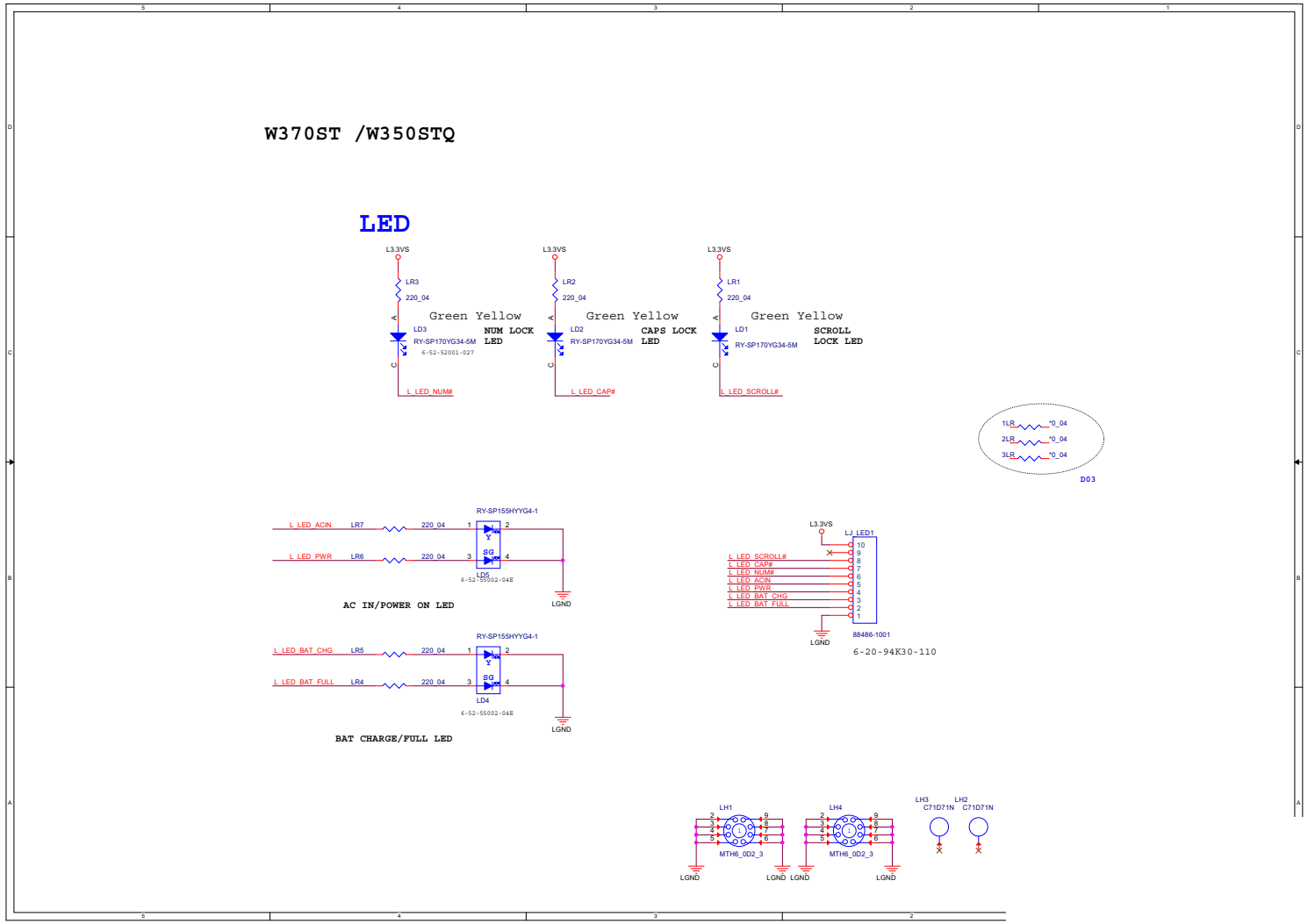
Sheet 46 of 55
AC-In, Charger

W370/350STQ Audio Board

Sheet 47 of 55
W370/350STQ
Audio Board



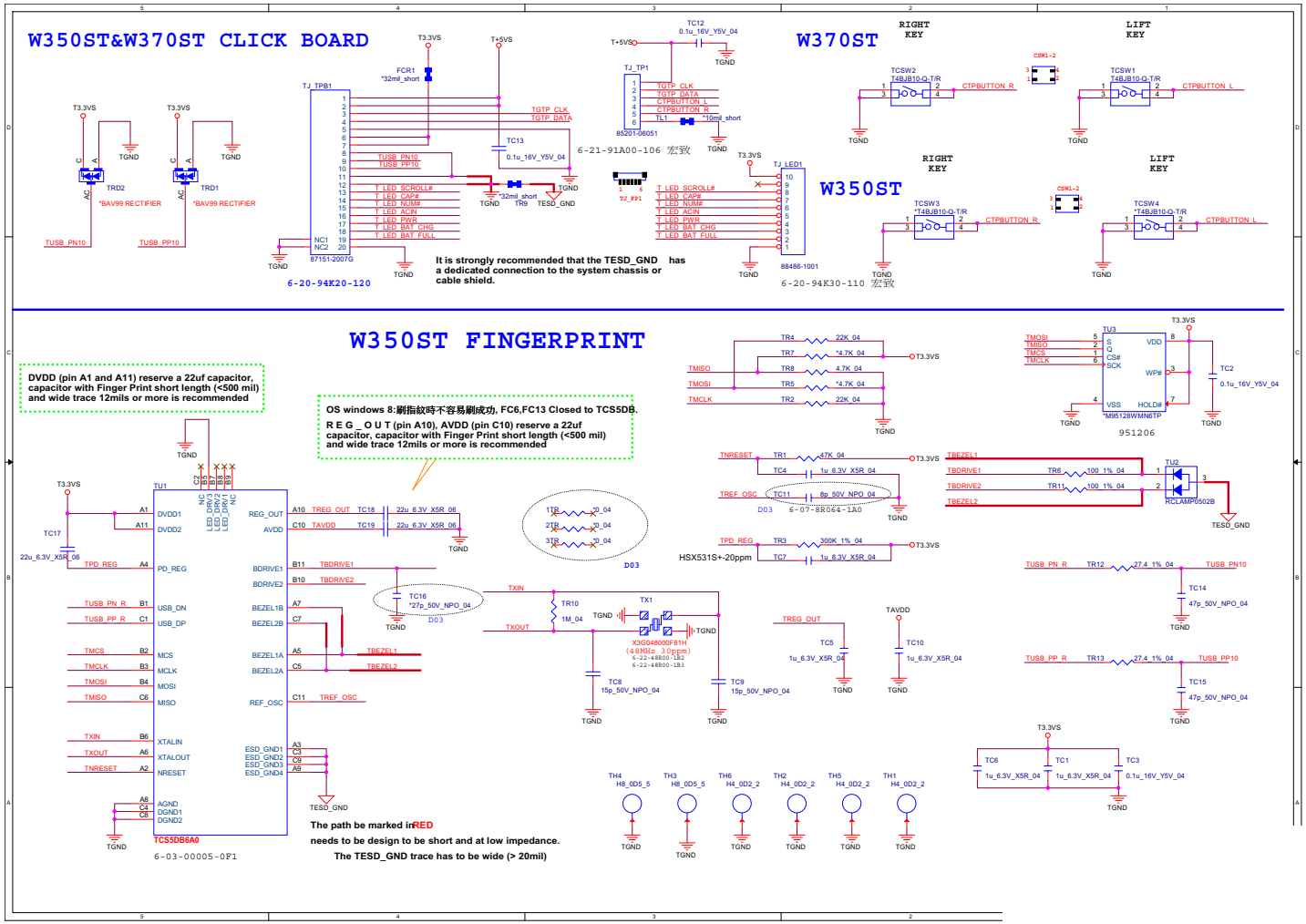
W370/350STQ Power LED Board



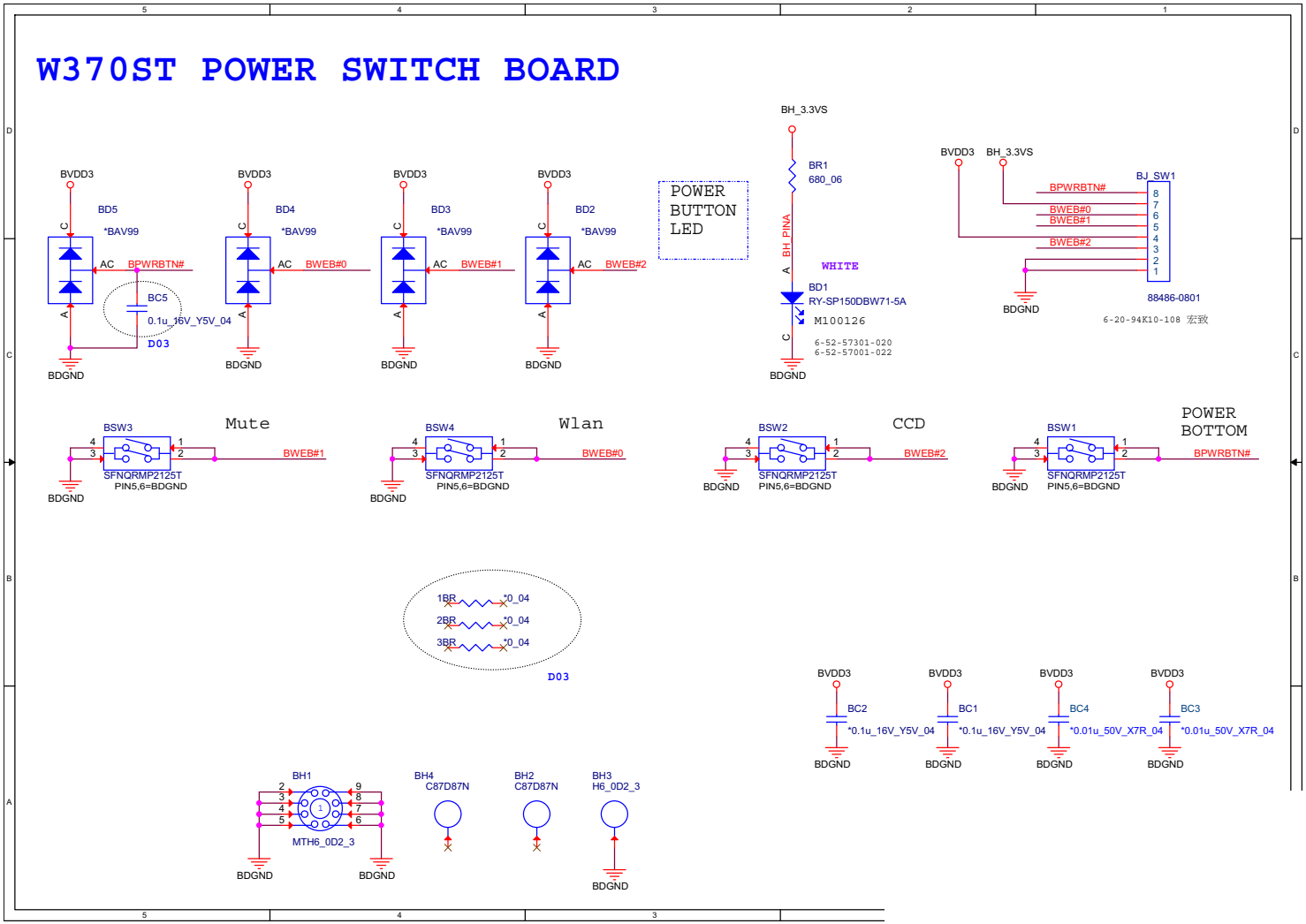
Sheet 48 of 55
W370/350STQ
Power LED Board

W370/350STQ Click Board

Sheet 49 of 55
W370/350STQ Click Board



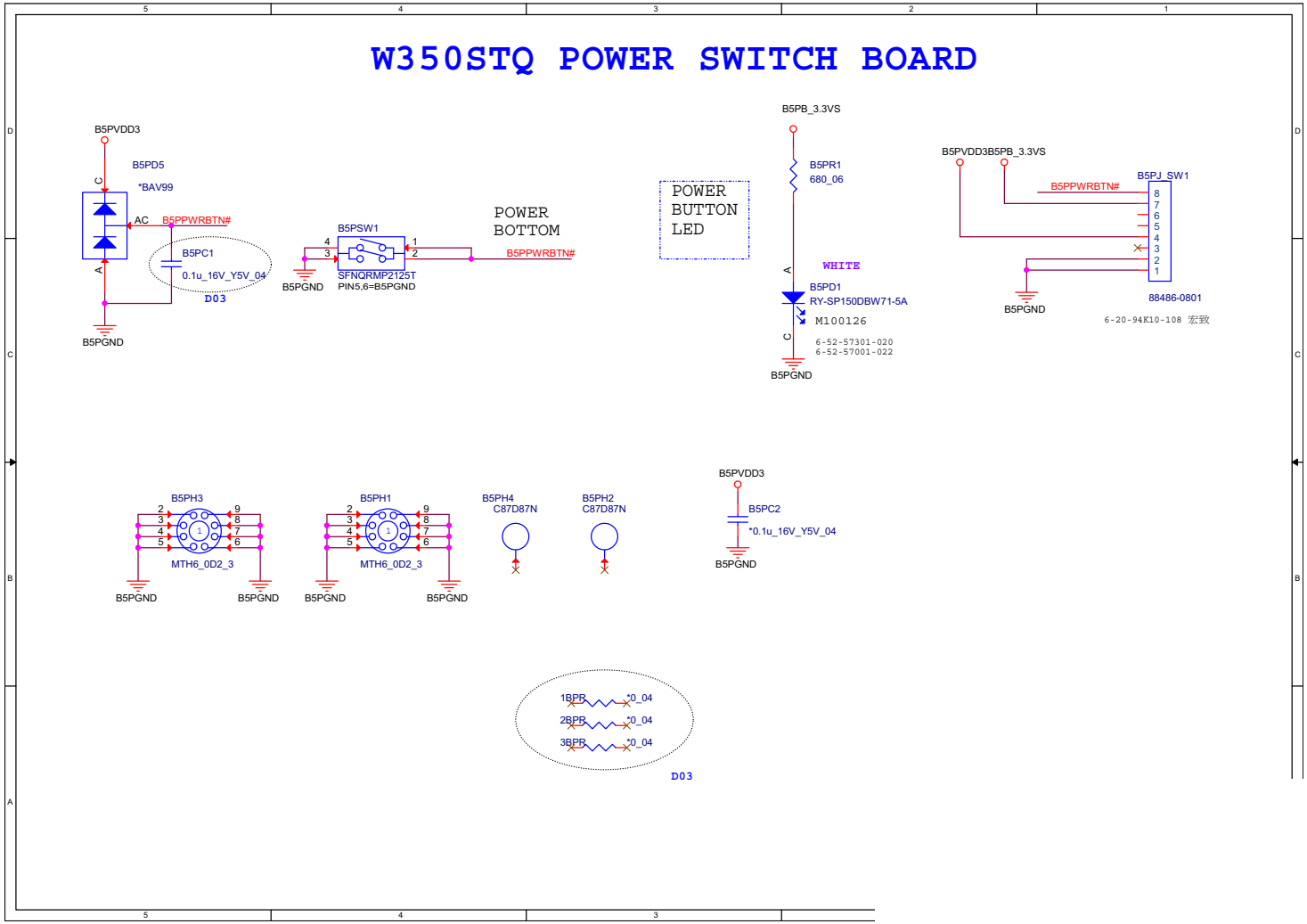
W370ST Power Switch Board



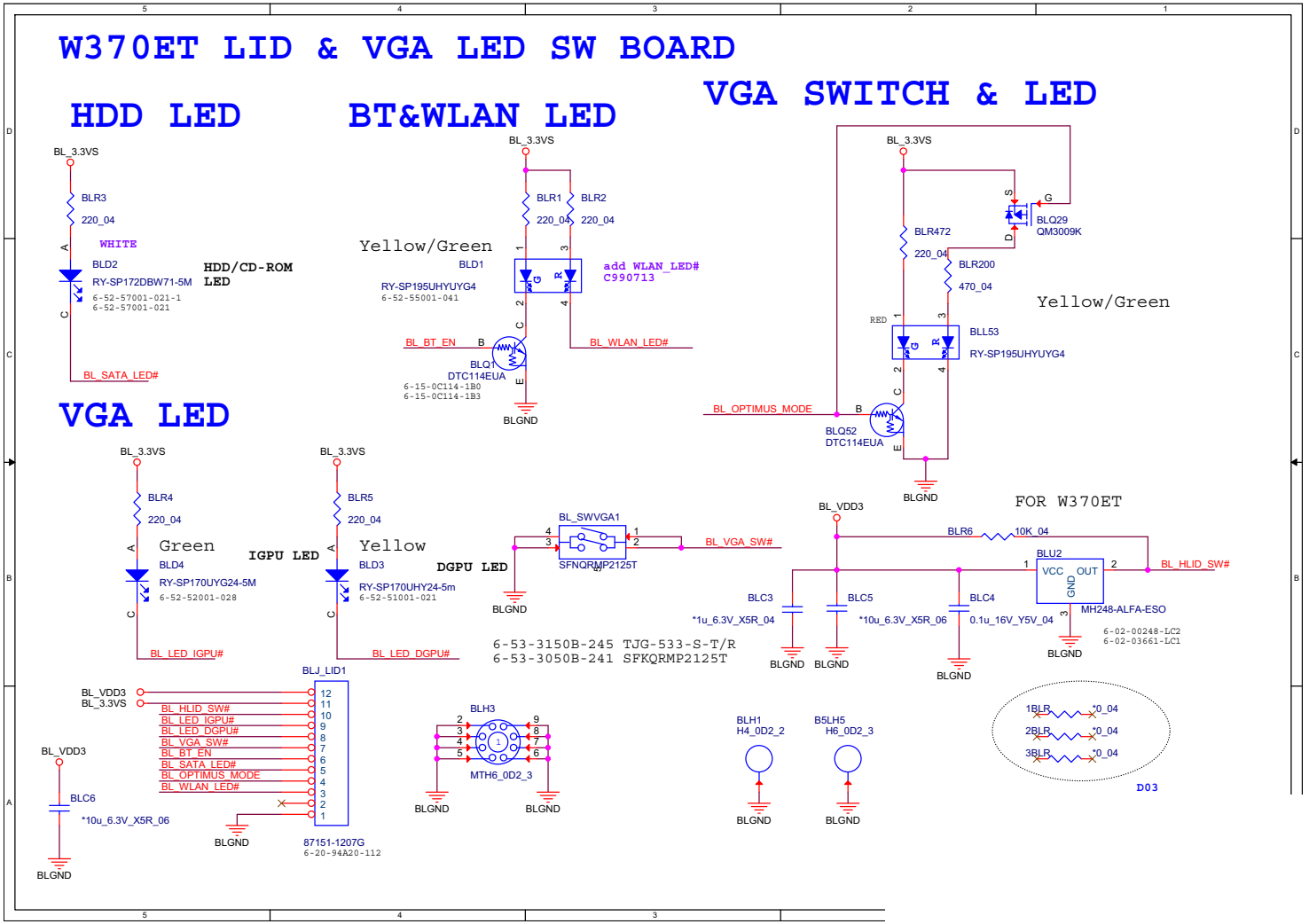
Sheet 50 of 55
W370ST Power Switch Board

W350STQ Power Switch Board

Sheet 51 of 55
W350STQ Power Switch Board



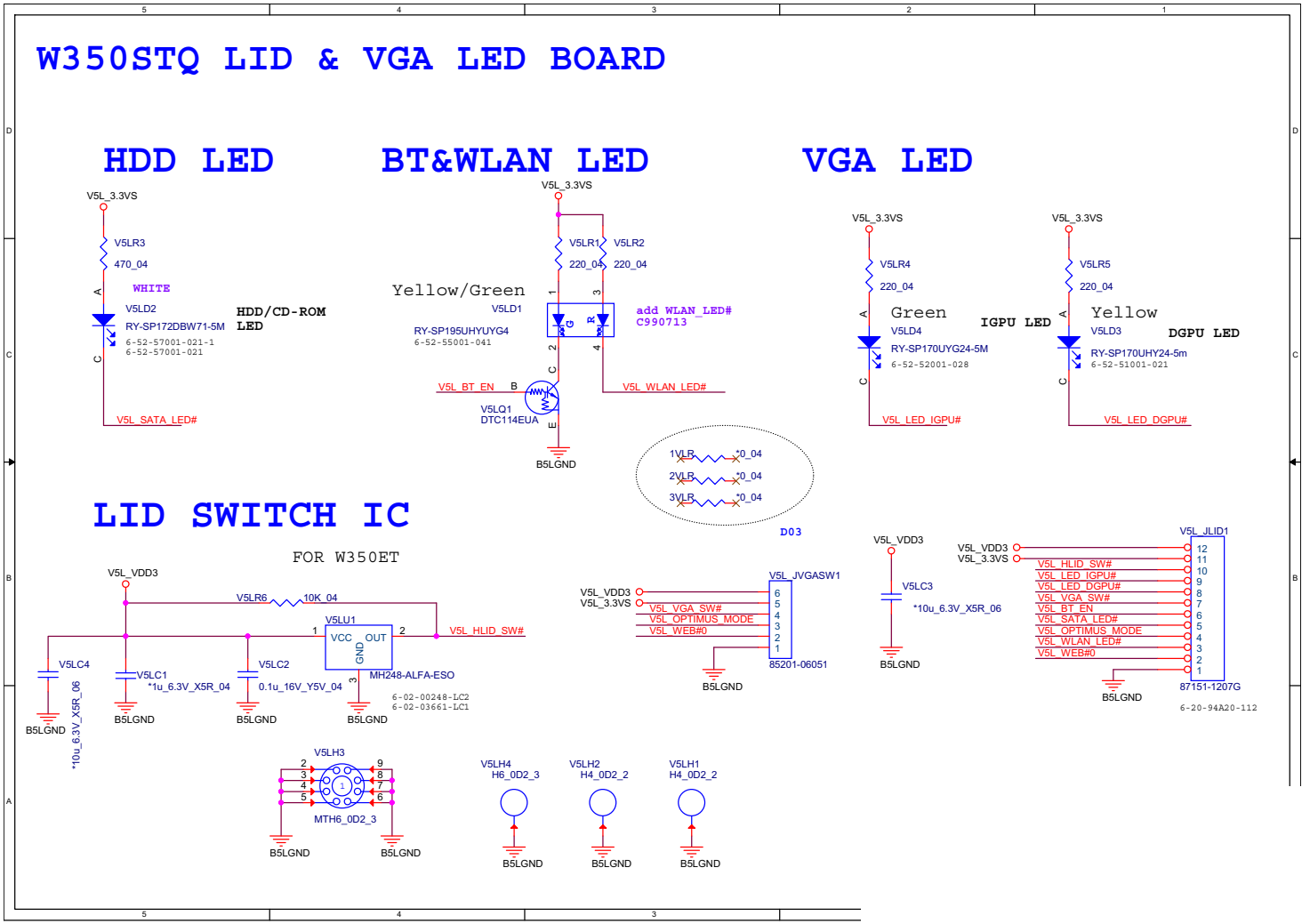
W370ST LID / VGA LED Board



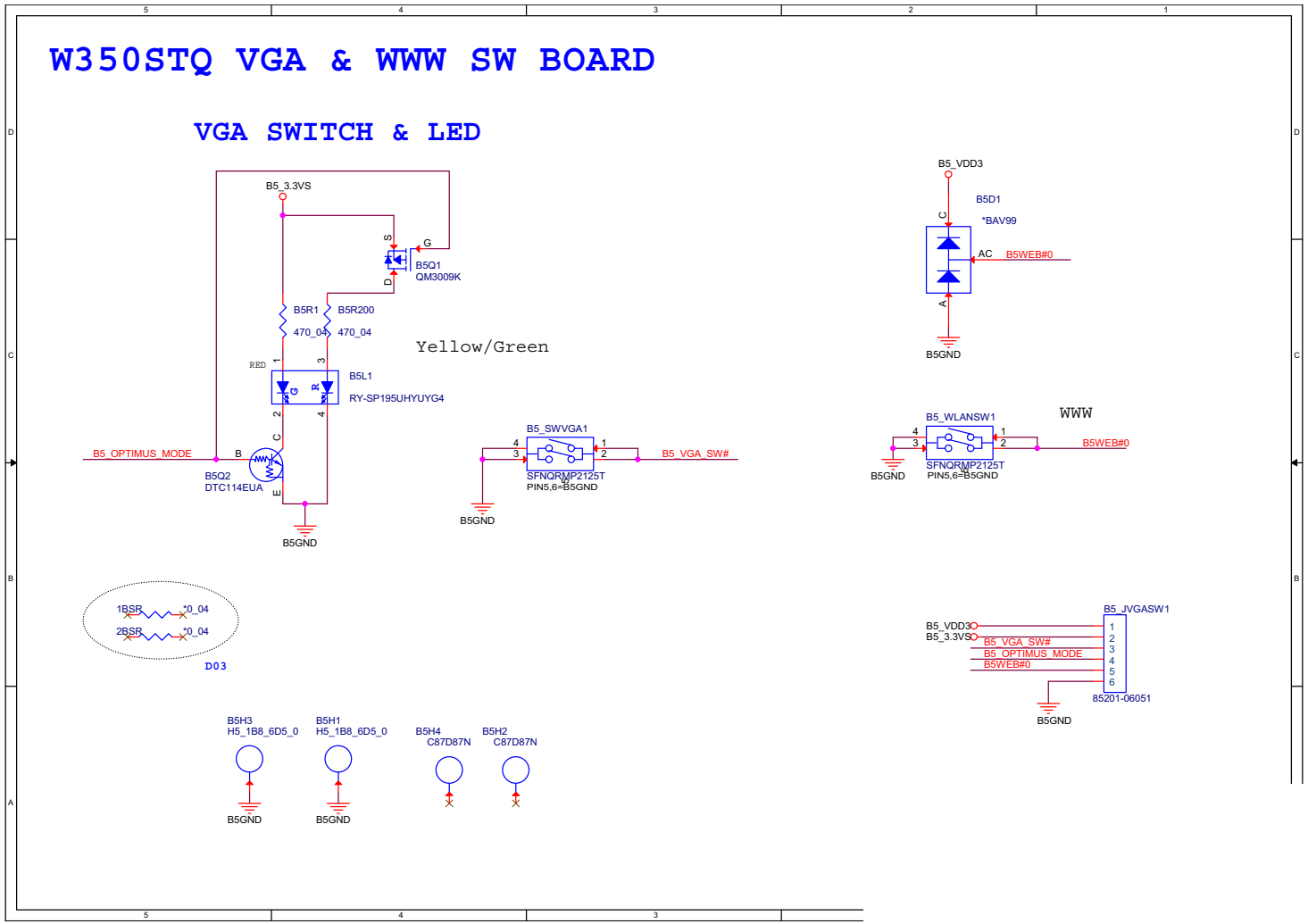
Sheet 52 of 55
W370ST LID / VGA LED Board

W350STQ LID / VGA LED Board

Sheet 53 of 55
W350STQ LID /
VGA LED Board



W350STQ VGA / WLAN SW Board



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W350STQ VGA / WLAN SW Board

POWER ON SEQUENCE

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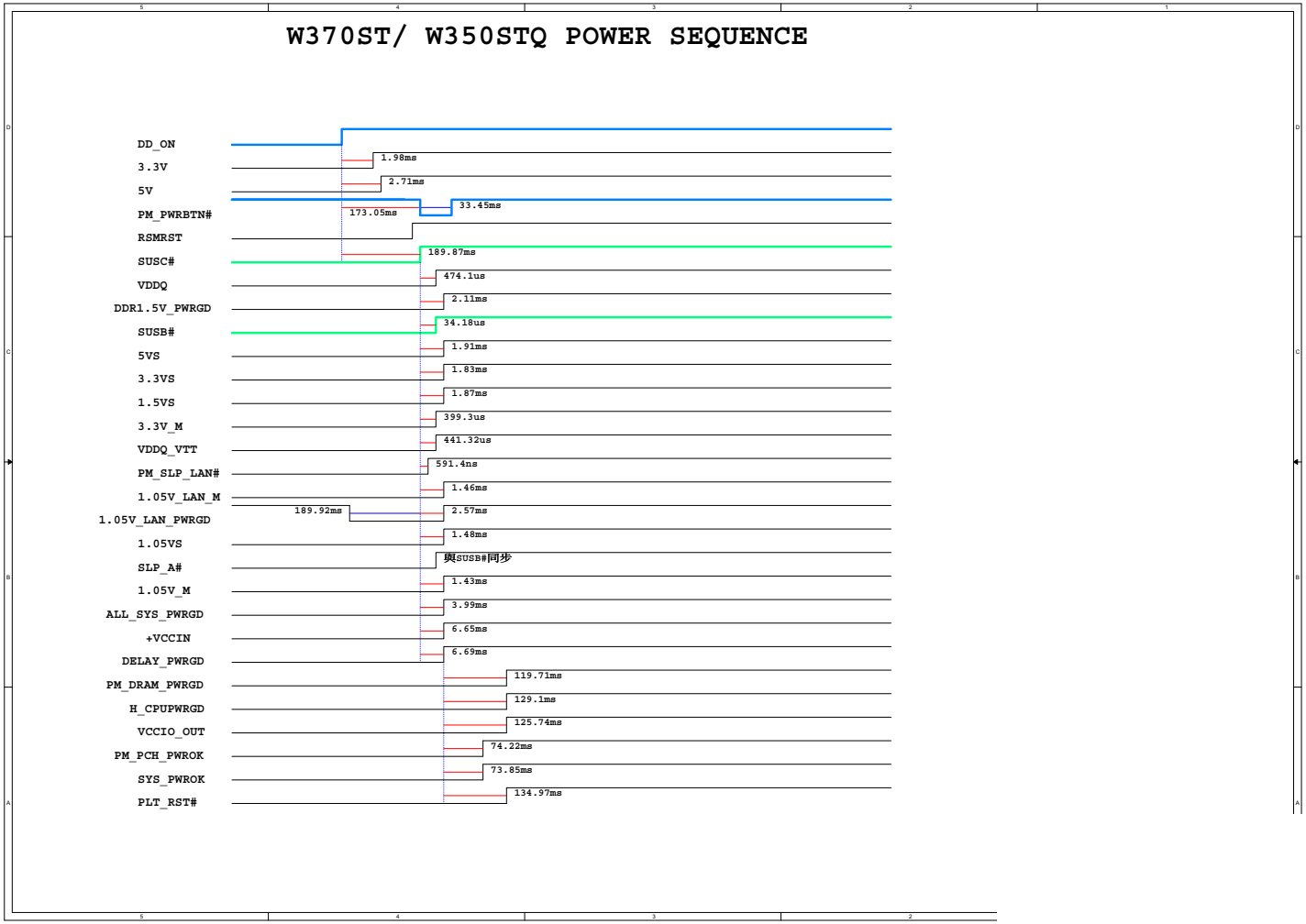
POWER ON
SEQUENCE



Appendix C:Updating the FLASH ROM BIOS

To update the FLASH ROM BIOS you must:

- Download the BIOS update from the web site.
- Unzip the files onto a bootable CD/DVD/USB Flash Drive.
- Reboot your computer from an external CD/DVD/USB Flash Drive.
- Use the flash tools to update the flash BIOS using the commands indicated below.
- Restart the computer booting from the HDD and press **F2** at startup enter the BIOS.
- Load setup defaults from the BIOS and save the default settings and exit the BIOS to restart the computer.
- After rebooting the computer you may restart the computer again and make any required changes to the default BIOS settings.

Download the BIOS

1. Go to **www.clevo.com.tw** and point to **E-Services** and click **E-Channel**.
2. Use your user ID and password to access the appropriate download area (BIOS), and download the latest BIOS files (the BIOS file will be contained in a batch file that may be run directly once unzipped) for your computer model (**see sidebar for important information on BIOS versions**).

Unzip the downloaded files to a bootable CD/DVD/ or USB Flash drive

1. Insert a bootable CD/DVD/USB flash drive into the CD/DVD drive/USB port of the computer containing the downloaded files.
2. Use a tool such as Winzip or Winrar to unzip all the BIOS files and refresh tools to your bootable CD/DVD/USB flash drive (you may need to create a bootable CD/DVD with the files using a 3rd party software).

Set the computer to boot from the external drive

1. With the bootable CD/DVD/USB flash drive containing the BIOS files in your CD/DVD drive/USB port, restart the computer and press **F2** (in most cases) to enter the BIOS.
2. Use the arrow keys to highlight the **Boot** menu.
3. Use the "+" and "-" keys to move boot devices up and down the priority order.
4. Make sure that the CD/DVD drive/USB flash drive is set first in the boot priority of the BIOS.
5. Press **F4** to save any changes you have made and exit the BIOS to restart the computer.

BIOS Version

Make sure you download the latest correct version of the BIOS appropriate for the computer model you are working on.

You should only download BIOS versions that are V1.00.XX or higher as appropriate for your computer model.

Note that BIOS versions are not backward compatible and therefore **you may not downgrade your BIOS to an older version** after upgrading to a later version (e.g if you upgrade a BIOS to ver 1.01.05, you **MAY NOT** then go back and flash the BIOS to ver 1.01.04).

Use the flash tools to update the BIOS

1. Make sure you are not loading any memory management programs such as HIMEM by holding the **F8** key as you see the message "**Starting MS-DOS**". You will then be prompted to give "**Y**" or "**N**" responses to the programs being loaded by DOS. Choose "N" for any memory management programs.
2. You should now be at the DOS prompt e.g: DISK **C**:\> (C is the designated drive letter for the CD/DVD drive/USB flash drive).
3. **Type the following command** at the DOS prompt:

   C:\> Flash.bat

4. The utility will then proceed to flash the BIOS.
5. You should then be prompted to press any key to restart the system or turn the power off, and then on again but make sure you remove the CD/DVD/USB flash drive from the CD/DVD drive/USB port before the computer restarts.

Restart the computer (booting from the HDD)

1. With the CD/DVD/USB flash drive removed from the CD/DVD drive/USB port the computer should restart from the HDD.
2. Press **F2** as the computer restarts to enter the BIOS.
3. Use the arrow keys to highlight the **Exit** menu.
4. Select **Load Setup Defaults** (or press **F3**) and select "**Yes**" to confirm the selection.
5. Press **F4** to save any changes you have made and exit the BIOS to restart the computer.

Your computer is now running normally with the updated BIOS

You may now enter the BIOS and make any changes you require to the default settings.